

October 1954

TECHNOLOGY REVIEW

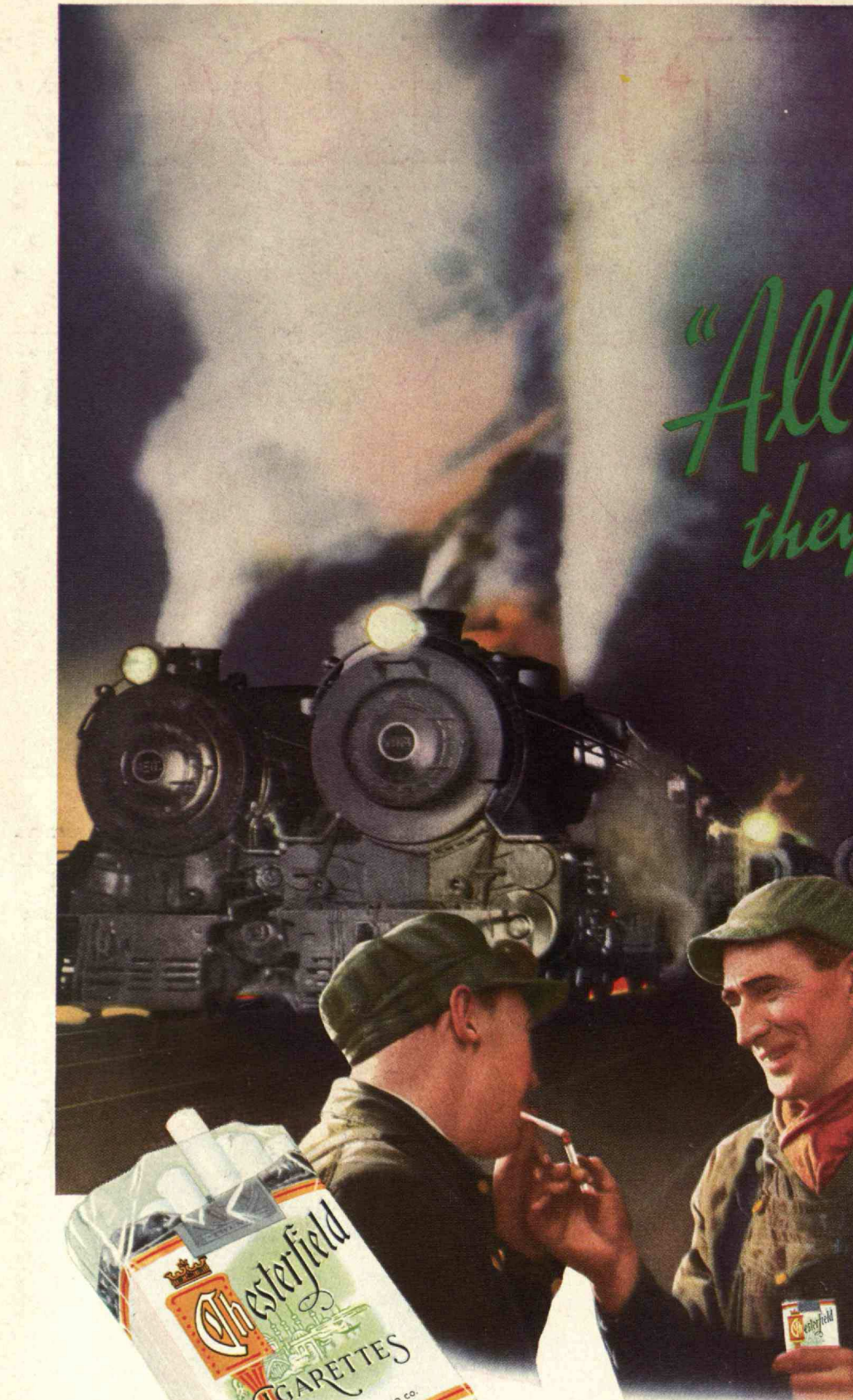
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technology review

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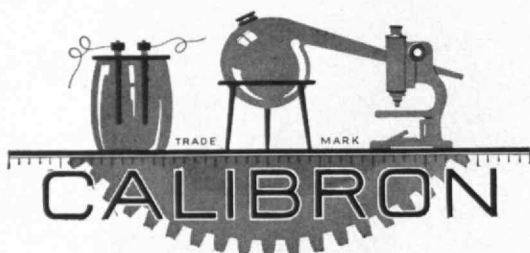
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THE TABULAR VIEW

AS DEAN of the School of Science and Head of the Department of Biology and Public Health at M.I.T., Professor S. C. PRESCOTT, '94, draws upon years of experience in pointing the way to a more fertile research procedure. (L. L. THWING, '03, rescues from near oblivion a man endowed, not with education, but with a remarkable amount of genuine Yankee ingenuity. After receiving Mr. Thwing's ms., we accosted a number of electrical engineers and peremptorily asked them who invented the electric motor, and almost invariably they either were stumped or replied "Faraday." (Strangely enough, no one credited it to the Chinese, a race that is rapidly achieving the dubious position of being blamed for nearly every invention.) The Review presents Mr. Thwing's article fully aware that supporters for other claimants to the invention of the motor will doubtless appear. The end of the article discusses certain of these other pioneers. Mr. Thwing collects data on the history of applied technology when his other hobby of building models does not interfere.

AT LAST the history of the Round Hill Experiment Station has been prepared. EDWARD L. BOWLES, '22, Associate Professor of Electrical Communications at Technology, is Director of this Station and he has been intimately associated with the work there throughout its existence. Colonel Green, who has made the station possible, is a son of the late, famed Hetty Green. One of the beguiling ideas which Professor Bowles mentions (page 20) which has grown out of the Round Hill work is the proposal for the transmission of a radio frequency signal which could be used as a source of time. By means of such a frequency standard not only could the world have a single reference frequency but clocks could be rigidly coupled to this radio time shaft with the expectation of realizing a single world time in place of the present awkward system. (JOHN C. SHERMAN, '95, is with the Brown Company, Portland, Maine. (The appreciation of the late Professors Phelan and Walker, published on page 24, was prepared for The Review by Assistant Dean THOMAS P. PITRÉ.

THE COVER of this issue contains four pictures drawn from a long sequence of high-speed shots of birds in flight made at the ornithological station on Cape Cod operated by Dr. O. L. AUSTIN of New York. The sandpipers shown on page 24 were also furnished by Dr. Austin. The pictures are, of course, the work of Messrs. EDGERTON, '27, and GERMESHAUSEN, '31. The Edgerton method of high-speed photography is rapidly being extended into new fields and is proving enormously helpful in the solution of technical problems. We record one notable instance on page 22 — its demonstration of a definite periodicity in the cavitation process. Readers will note in this issue a new department, "Mail Returns," which will include timely letters from our readers. We hasten to add, however, that it will be a general policy not to publish letters as long as the one which initiates the section.

**IN THEIR 1934 WORLD'S FAIR BUILDINGS,
CHRYSLER, FORD AND GENERAL MOTORS USED—**



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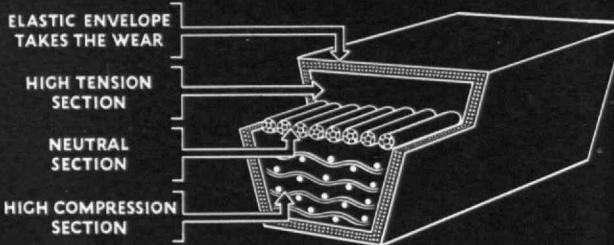
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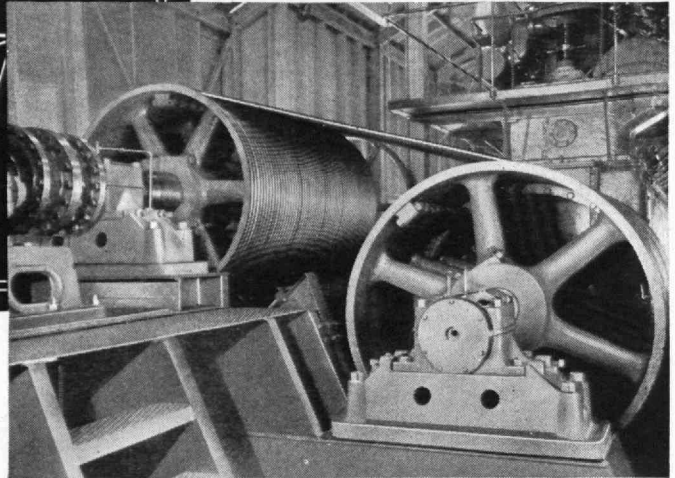
It is part of a 1000 H.P. Diesel-driven pump installation, recently made by the Worthington Pump and Machinery Corporation on a huge dredge operated by the McWilliams Dredging Company of Chicago.

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M.I.T. Photo

THE TECHNOLOGY REVIEW

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VOL. 37, NO. 1

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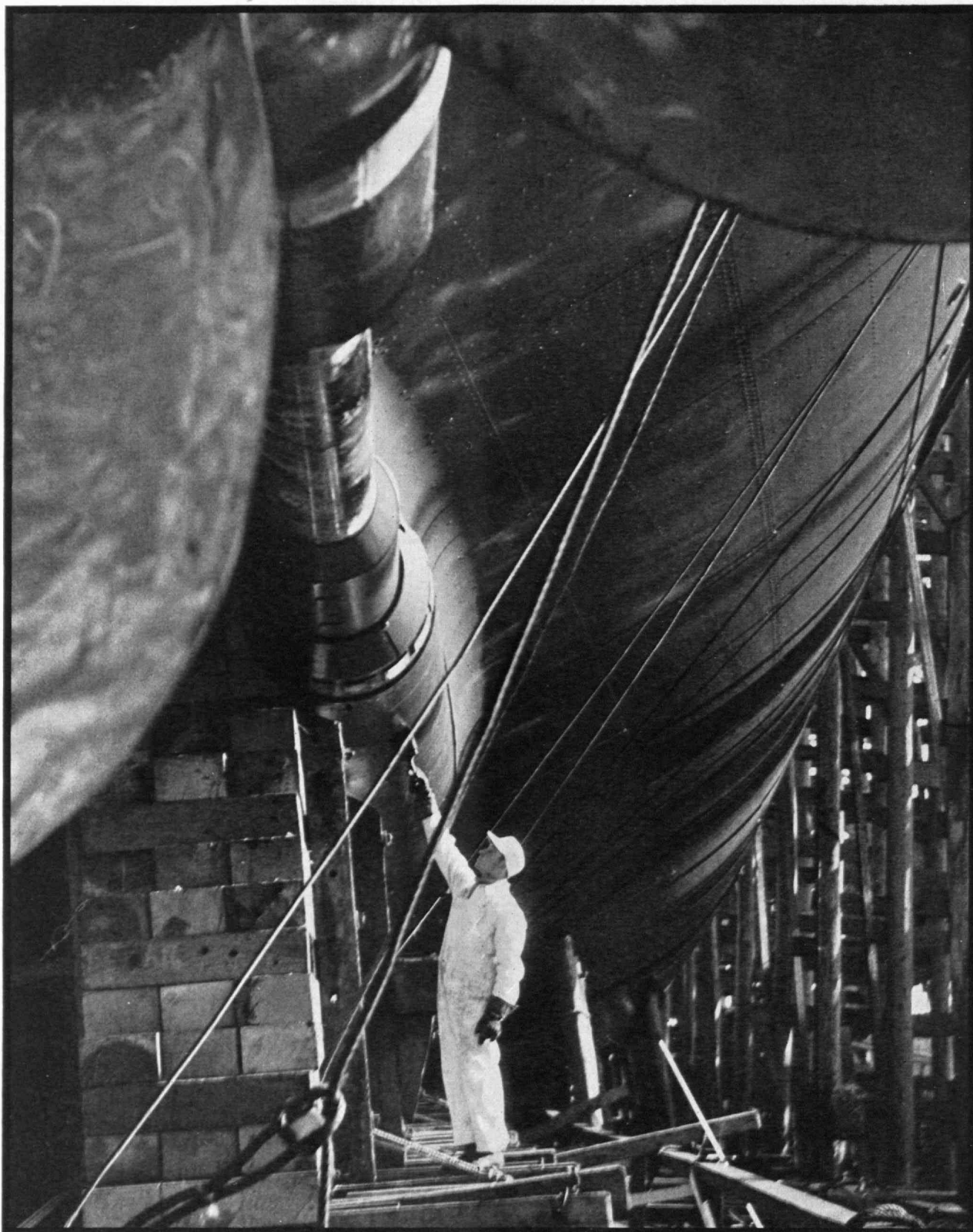
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Rittase

Tonnage figures may indicate a low point in shipbuilding activity, but to the layman interesting things are happening in shipyards as the United States enlarges its navy and England and France speed construction on two monster craft. On September 26 as thousands cheered and bands played, Queen Mary aimed a bottle at the stem of the 1018-foot, 18-story high No. 534, and safely in the water went the

30-million-dollar job. Her ventilators, says publicity matter, could (but, let us hope, won't) swallow a subway car. By 1936 she's due to enter the North Atlantic ferry on a four-day schedule, competing with the French Normandie (the comparably sized liner now fitting out at St. Nazaire for next summer's season), with the Italian Rex and Conte di Savoia, and with the German Bremen and Europa.

THE TECHNOLOGY REVIEW

Vol. 37, No. 1



October, 1934

The Trend of Affairs

Frontier Pushing

TECHNOLOGICAL frontier pushing, geographically and figuratively, has been progressing at a remarkable rate in 1934 despite world depression. The following inventory sheet of recent achievements, beginning with transportation, contains formidable evidence of this advance.

ROADS. While an English company, in the absence of motor roads, is shipping, via camel-back, electrical equipment to light Tibet's forbidden city of Lhasa, a force of 12,000 men is diligently at work completing a trunk highway from the Rio Grande crossing at Laredo, Texas, to Mexico City. Simultaneously, China's vast terrain is succumbing stubbornly to penetration by roads through the activities of the Chinese National Economic Council. This body, in the face of inner chaos and aggression from without, has financed or supervised in the last two years 2,500 miles of construction and has a program of 5,600 miles for the current year. In Italy and Germany, unified national highways are rapidly taking form, and the latter's super-highway express systems (*autobahnen*) constitute a monumental program.

The activity of Mexico is particularly significant in the light of an expanding plan to interlace the three Americas by highways. Engineers of the Automobile Club of Southern California have computed that 10,991 of the 13,219 miles, the estimated length of the International Pacific

Highway, are at least passable. In other words, they say that 83% of the route from Fairbanks, Alaska, to Valparaiso, Chile, and Buenos Aires, Argentina, is travelable under favorable conditions. This colossal stretch, passing through 17 countries, will certainly be, if ever completed, the world's longest highway.

AIR TRANSPORT. While astronomers opine that the universe is expanding, engineers demonstrate that the earth shrinks. On July 7, 1929, there was inaugurated a 48-hour air-rail passenger service across the United States; on August 1-2, 1934, there began a 16-18-hour overnight all-air service using D. Douglass's [14] newest monoplanes having a cruising speed of 175 miles per hour. Still faster Boeings are in the offing.

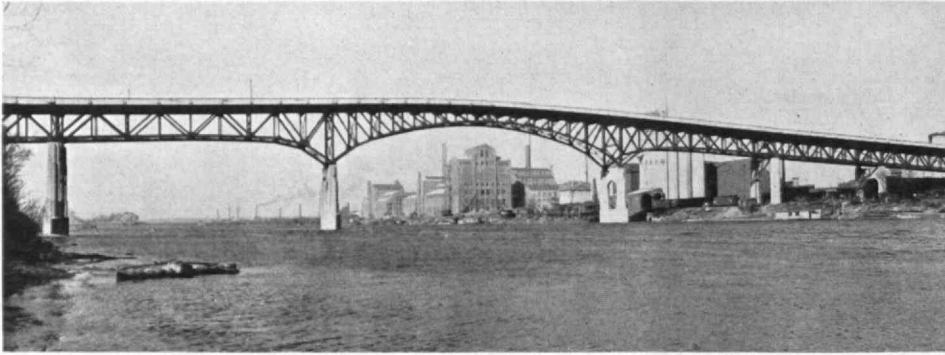
Over-water air travel, especially in the South Atlantic, is being rapidly bettered. The *LZ-129*, slightly longer and with a capacity of a half million cubic feet more than the *Macon*, is soon to supplement the *Graf Zeppelin* on the Europe-South America service; the 5,000-ton M.S. *Schwabenland*, with a rotating catapult on its after deck, is now being anchored somewhere between Africa and Brazil as a companion floating airport to the *Westfalen*, similarly stationed last January. Then the bi-weekly transocean mail service of the *Deutsche Lufthansa* will expand to a weekly schedule. This company, which has a Chinese affiliate in Eurasian Aviation Corporation, envisions a service from Berlin to the Far East.

Our own prestige in international air is, for the present, committed to Pan American Airways with its criss-

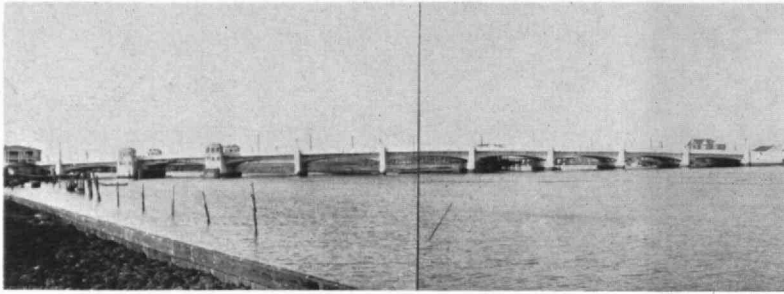


C. A. Dyer

Current in natural lightning flashes like this seldom rises above 150,000 amperes. Last summer General Electric engineers piled up 250,000 amperes in creating artificial thunderbolts



Class A. Cedar Street Bridge, across the Illinois River at Peoria. The main cantilever has a 296-foot span



Class B. Shark River Bridge, Avon, N. J. It has nine spans, each 83 feet long, plus one bascule span of 110 feet



Class C. McLoughlin Bridge across the Clackamas River in Clackamas County, Oregon. The central span is a 240-foot tied or bow string arch

PRIZE WINNERS

Of the steel bridges built in 1933, the American Institute of Steel Construction has selected these three as the most beautiful

crossed flying routes over the Caribbean, in the Central Americas, and up and down the South American coasts. During August, Pan American's new 19-ton *Brazilian Clipper* negotiated her maiden voyage to the Argentine without mishap to cut the running time between Buenos Aires and the northern terminal in Florida from seven to five days. Her last hop, 1,900 miles from Port of Spain, Trinidad, to Miami, took a little over 12 hours.

TUNNELS AND BRIDGES. As air lines wistfully ponder future cruising speeds of 250 miles per hour, land transportation crawls into new territory, speeds up by dodging over and under barriers. Within a single month (July), two vehicular tunnels opened: the Queensway (longest and largest yet built) between Liverpool and Birkenhead, and the Sumner or East Boston tube, leading from a point near Faneuil Hall, Boston, under the harbor to what used to be Noddle Island; and a caisson was sunk in the Hudson off West 39th Street to get sand hogs started on an upstream duplicate of the Holland Tube through which the 75,000,000th vehicle passed around midnight of September 8.

The East Boston, much smaller to be sure than the English tunnel, nevertheless ought to go down in the files as somewhat epoch-making in the muck-handling methods perfected during its building.

More and more acutely does the need for improved motoring arteries press upon the multitudes seeking entry to or egress from Manhattan Island for which New

York's newest bore is to be a partial answer. Ferries, which ply in the reaches of the Hudson between the Holland Tunnel and the George Washington Bridge, still carry some 12,000,000 vehicles a year, as many as crossed by them ten years ago before either tunnel or bridge were available to carry the major portion of the traffic load.

Manhattan's eastside burgeons as well as its westside, and, because it has been used to bridges, calls for more. But, whether the rising towers of the new Triborough Bridge will do more than temporarily muffle the hue and cry of the impeded motorists, remains to be seen. Nevertheless, its three-and-a-half miles overall length — it is really a plural bridge with four distinct spans, including one of 1,380 feet over the Hell Gate, connected by elevated boulevards — will get many, many times the patronage of many another bridge now built or building; that over the Golden Gate, for one example, with its record suspension span a fifth longer than the 3,500-foot George Washington Bridge across the Hudson. The other San Francisco Bridge, the one to Oakland, may fare better as to patronage. As the world's greatest aggregation of bridge units (plus a tunnel), this enterprise is a formidable instance of engineering. Its remarkable 230-foot open caisson piers were six months ahead of schedule last July and the pioneer tunnel on Yerba Buena was holed through.

As Glasgow prepared last month for the launching of the 534 (see page 6), it was also studying estimates for a bridge over the Clyde; and at Stockholm the

Troneberg Bridge, with a reinforced concrete arch span of nearly 600 feet, and second only to the Plougastel near Brest, France, was awaiting traffic.

Mammoth though a tunnel like that under the Mersey seems, and is, the really lengthy bores (excepting aqueducts) are rail tunnels. The turn of the century found excavation being actively prosecuted on the international Simplon tunnel to join Switzerland and Italy with a single-track of rails. It had been begun in August, 1898, and when finished in January, 1906, measured 12 miles and 668 yards between portals. Thus it exceeded the St. Gothard, earliest of the Alpine tunnels, by three miles, and the Simplon still remains the world's lengthiest.

But the new eleven-and-a-third-mile Appenine tunnel of the Italian State Railways through the Etruscan Alps becomes the world's lengthiest *double-track* bore. Begun some 20 years ago and delayed by the War, it was finished in 1930, but dedication was postponed pending completion of the remainder of the 61-mile electrification and relocation of line between Bologna and Florence, of which stretch 23 miles is now underground.

Another railroad tunnel, world's eighth in length but exceeded in North America only by Great Northern's Cascade, realized the dream of its original promoter, David Moffat, only last summer. Some 30 years ago the proposal to lay a railroad westward from Denver was seriously broached but financial difficulties prevented tunnelling under James Peak and so the line went over the Continental Divide at Rollins Pass, elevation 11,600. Money ran out and the Denver and Salt Lake Railroad desisted 232 miles from Denver at Craig, less than half way to Salt Lake City. Moffat died broke in 1911. The six-mile tunnel which bears his name was completed in February, 1928, to eliminate 23 miles of track and a 2,600-foot climb, but still the western terminus of the line was Craig in the middle of the barren Yampa River valley. Now, with the completion of a 38-mile cutoff from Orestod on the D. & S.L.R.R. to join the Denver and Rio Grande Western at Dotsero, after bitter disillusionments and disappointments to those who fought for it, Denver is at last on a main transcontinental line.

September, somewhat unexpectedly, found the early completion of the Moscow subway solemnly predicted, which lent credence to the reported port work by the Soviets at the mouth of the 3,000-mile Lena River where it flows into the Arctic on the Siberian coast. This world's northernmost base, yet unnamed, would open a vast empire of timber and rich minerals, of petroleum pools and furs. As if in recognition of the pressing needs of the venture, word comes from Germany of a new rail of extremely high tensile strength and toughness especially at low temperatures—a rail said to be ideal for eliminating fractures caused by brittleness of steel under Arctic conditions.

While Russia plans to open more of the icy wastes of Siberia, France seeks to put steaming Africa within five torrid days of Paris. A French governmental commission of engineers and economists has committed itself to the opinion that \$200,000,000 and eight years would build an 1,800-mile trans-Saharan line to connect Oran in Algeria by rail with the River Niger.

FROM many another distant outpost issues tidings of activity other than in transportation. Chile, last August, confident of banishing drought periods, dedicated a dam, South America's biggest, on the Limari River, 200 miles north of Valparaiso; the first oil flowed through the 1,200-mile pipeline of the Iraq Petroleum Company from Kirkuk in time to fill the reservoirs on tide-water at Tripoli, Syria, by nightfall of July 15; and contracts have been let to an American Company to air condition Robinson Deep—potent source of gold—where, in temperatures over 100 plus a constant humidity of nearly 100, miners labor 8,380 feet vertically under the surface of South Africa's Witwatersrand.

While mines, cooled or uncooled, have been working overtime to dig gold out of the earth, salvage boats have been fishing it out of the sea. On August 21, the *Artiglio* landed at Plymouth about three-quarters of a million dollars of gold salvaged from the wrecked *Egypt* still lying 60-odd fathoms deep off Ushant which, together with a reported recovery of five million extra from the torpedoed *Laurentic* in Irish waters, may have inspired the hopes of those who also on August 21 announced plans to recover from the *Islander* the gold she might have been carrying when she sank off Alaska, in 1901.

AND SO with item after item the inventory continues, and will be continued in The Review next month when progress on the great dams and aqueducts of the West will be recorded.



Form assumed by fresh dewdrops

C. Foerster

136 Elements? 137 Dimensions?

DISINTEGRATION of radioactive substances is a spontaneous process, natural to the materials which show it, inherent in them, not to be stopped, slowed down, or speeded up by all the piety and wit which men have devoted to the study of the phenomenon since it was first observed by Becquerel in 1896. A ten-degree rise of temperature doubles the velocity of most chemical reactions, but one of a thousand degrees is without effect upon the rate of decomposition of radioactive materials.

These simple facts lend emphasis to new discoveries this year in the field of radioactivity. If man cannot control this inevitable process, he evidently can initiate it: artificial radioactivity has been produced in certain elements which are normally stable. He may even synthesize entirely new elements possessing radioactive qualities: one scientist thinks he has created an element (93) outside the 92 which many have believed to be the only possible ones.

Early this year Mme. Irene Curie-Joliot (daughter of the late discoverer of radium) and her husband, Professor F. Joliot, announced that by bombarding aluminum, boron, and magnesium with alpha particles (cores of helium atoms), they had produced transitory radioactive forms of phosphorus, nitrogen, and silicon. The materials while undergoing bombardment emitted positrons, but the emission continued after the bombardment had ceased. In the case of aluminum which had thus been rendered radioactive, the intensity of the radiation from it decreased by one-half of its amount in three and one-quarter minutes, or, as we say, the half-life of the radioactive material was three and one-quarter minutes. The half-life of the material produced from boron was 14 minutes, of that from magnesium two and one-half minutes.

The same investigators also bombarded other elements with alpha particles, but were not able to produce artificial radioactivity in hydrogen, lithium, beryllium, carbon, nitrogen, oxygen, fluorine, sodium, calcium, nickel, and silver.

The Curie-Joliot experiments have been quickly substantiated by other investigators. Lauritsen and Crane have bombarded lithium fluoride, beryllium, boric anhydride, carbon, and magnesium with deuterons (cores of the new heavy hydrogen atoms) and produced radioactivity

in the cases of carbon and boron, the half-lives of the radio-elements being respectively 10 minutes and 20 minutes. The Curie-Joliot had predicted that radioactive forms of phosphorus, nitrogen, and silicon could be produced by bombardment with particles other than alpha particles, and the California investigators using deuterons did indeed produce a radioactive material from carbon about one per cent of which yielded radio-nitrogen while about 99% gave the isotope of carbon.

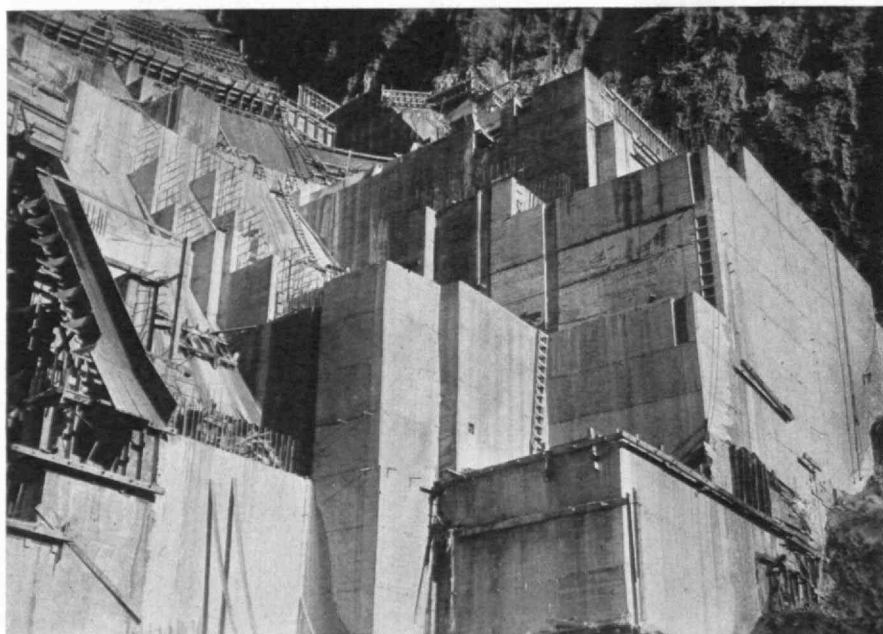
In England the favorite implements of bombardment have been protons, or the cores of ordinary hydrogen atoms. Cockcroft, Gilbert, and Walton at the Cavendish Laboratory at Cambridge have bombarded graphite with protons and have produced radioactive material having a half-life of ten and one-half minutes.

But the most astonishing of this remarkable series of discoveries in radioactivity this year was announced this summer in Rome, where Dr. Enrico Fermi of the Royal University bombarded uranium with neutrons and obtained a new element, provisionally numbered 93, having a half-life of 13 and one-half minutes. While the earlier investigators had bombarded relatively light elements, Fermi used the heaviest of them, uranium, 238 times as heavy as hydrogen. Moreover, his source of neutrons was not particularly powerful. The radioactive gas, radon, acting upon a piece of beryllium caused the latter to give off swift-moving neutrons which struck upon a nearby piece of uranium. Fermi's proof of the activity of the new element, number 93, has not yet been announced, and his experiments have not yet been confirmed by other workers. In fact, Dr. Aristid von Grosse and Meyers Agruss of the University of Chicago, as a result of their work in isolating radioac-



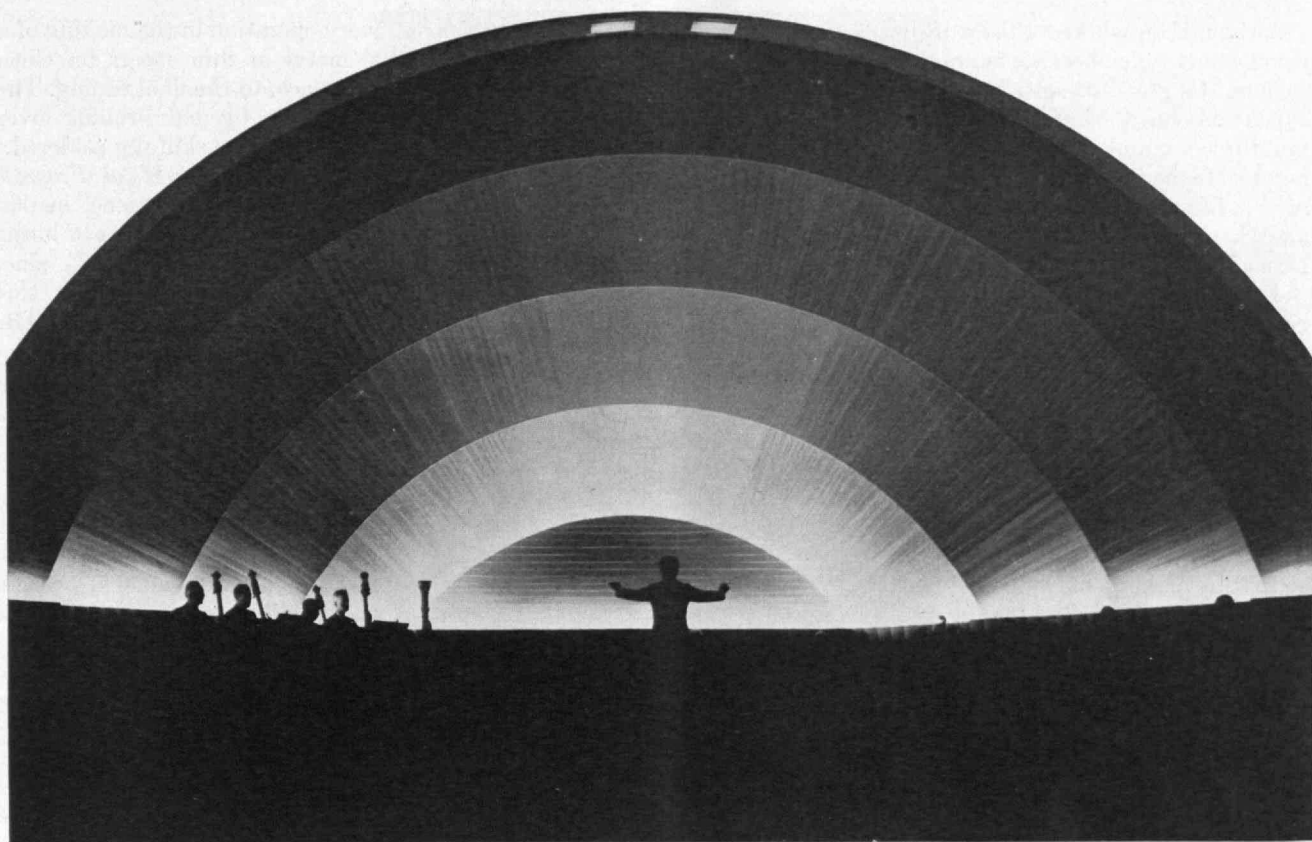
Galloway

Rainbow over Eastern Cataract, Victoria Falls. Near here British are building a great railroad bridge of record length over the lower Zambezi



Science Service

Concreting at Boulder Dam represents practically a new art with its columnar, air-cooled construction. The two-millionth cubic yard of concrete was poured last June and an equal amount more is scheduled to be in place before the end of the year



Orne

ESPLANADE CONCERT — BOSTON

Facing scenes like this of a summer's evening in several American cities sat many music lovers. Likewise did we, and once in a perverse, mechanistic moment, we stooped to speculating on the technical details of the wind instruments. How much tube makes a tuba, what alloys are used in a French horn, how many parts has a sax? Answers to these and similar questions are really interesting and a few are presented below

tive element 91 (protactinium), have suggested that Fermi's material may be one of the four isotopes of this element instead of a new element. (Isotopes, says Soddy, may be colloquially described as elements, the atoms of which have similar outsides but different insides.)

As elements, isotopes, and dimensions multiply, nature's infinite variety becomes appallingly more manifest. Eddington (who this summer described a space having 137 dimensions!) not long ago calculated on theoretical grounds that 136 is the maximum number of the possible elements. The opinion prevails among chem-

ists and physicists that whatever heavier elements there may be beyond the conventional 92 will be transitory substances which break down spontaneously, as radium does, but faster.

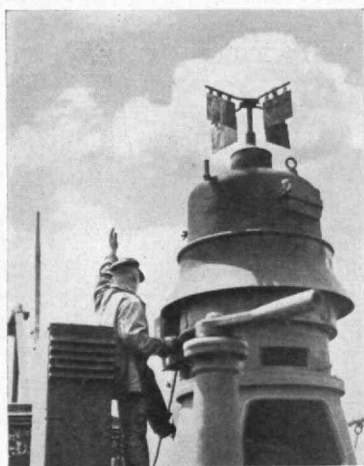
Conch Shells to Modern Alloys

THE ancient musician who blew lustily on a conch shell or played upon

a flute of reed started an industry which now demands various metals and special alloys from which to fashion the intricate wind instruments required for expressing the widening voices of music.

With few exceptions, the development of musical instruments has anticipated the requirements of the composers. Here and there in musical history a great master called for new voices to express his musical thoughts. Instrument makers, however, have striven chiefly to improve existing forms rather than to design new ones. They have tried many materials, ranging from the early use of sea shells, the horns and bones of animals, and wood to clay, gold, silver, bronze, ivory, hard rubber, nickel, the newer plastics, and the modern metal alloys.

The development of modern wind instruments owes much to the genius of Antoine Joseph Sax, the son of Charles Joseph Sax, a Belgian musical instrument maker of great skill. The older Sax improved the clarinet, and the son, working with him, made so many contributions that he is known as the father of modern wind instrument structure. To those who think of the saxophone as a comparatively new instrument, it will be surprising to learn that Antoine Sax designed it in 1846. His quartet of soprano, alto, tenor, and bass saxophones gave musicians four new and welcome voices, and to the amateur he contributed an instrument capable of maddening potentialities. While it is much used in modern popular orchestras, the saxophone's true sphere is the wind band.



Bartlett

Dry-dock pump

Although he worked chiefly in brass, Sax also made wood winds which became famous among European musicians. His greatest contributions were in the mechanical arrangement of controls, such as keys, slides, and mouthpieces, and in the acoustical forms of his instruments. He died in Paris in 1894, 40 years ago, in poverty after a life marked by the genius of his mechanical and artistic skill and by the lack of it in managing his business affairs.

Fundamentally, a wind instrument is simply a form to control the vibrations in a column of air. The shape of the column, its diameter, and the length determine the sounds produced by various instruments. The physical composition of the materials from which wind instruments are made is said to have no influence on the tone color. The length of the air column affects pitch, its diameter governs the breadth of tone, and the shape of the bell or opening from which the sound issues has acoustical influence.

In the making of wind instruments, therefore, the manufacturer seeks materials which may be readily shaped to various intricate designs. Many of the new metal alloys lend themselves to such treatment, for they are not only capable of being spun or turned, but have corrosion-resisting characteristics and may be soldered, welded, and plated by the most advanced methods. Only the organ pipes defy modern machine production methods. The pipe fashioned by hand by a skilled craftsman is said to produce tones unattainable on machine-made units. Metal now is used in making all organ pipes, although at one time wood was invariably employed for the large bass note tubes. The craftsman in

this trade carries out every operation in the making of a pipe, from casting the metal in thin sheets on cloth spread over a flat stone surface, to the final tuning. The sheets are formed into pipes by hand-rolling over wooden mandrels and the seams are skilfully soldered.

In an article on wind instruments, *Metal Progress* finds that two types of brass are used for most instruments. The sheet brass employed in the bodies of horns contains approximately 75% copper and 25% zinc. Having a melting point higher than 65-35 brass, this metal may be readily brazed with a 50-50 alloy. The rods and tubing for levers are made of a free-turning brass composed of 3.5% lead, 62% copper, and 34.5% zinc. In addition to brass, the instrument makers also employ nickel silver, bronze, and sterling silver. Gold and silver are widely used for plating.

That wind instruments are far more complicated than their appearance indicates is shown by the fact that a saxophone, one of the most simple, has no fewer than 548 separate parts, with 23 tone holes and 53 key posts. French and Souza horns are still more intricate. Some of them contain as much as 17 feet of tubing.

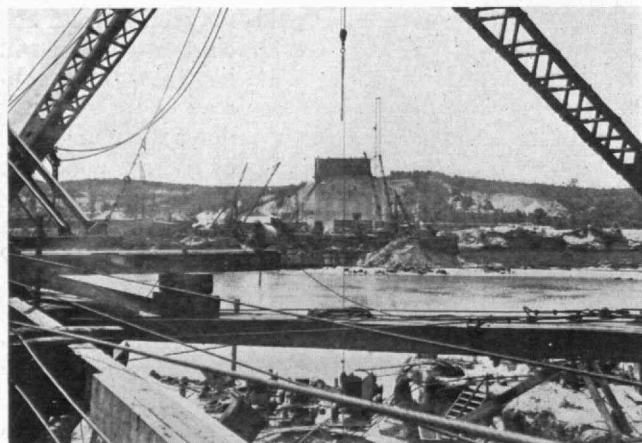
The brass wind instruments are usually made in two sections. The body is formed of tapered tubing, while the bells, which must be accurately designed and most carefully formed with walls of uniform thickness, are spun separately. The tapered sections of large horns are shaped to the proper arc by bending over wooden or metal forms, and in this operation they are filled with hard pitch to avoid distortion of shape. Saxophone bells and some of the elbows of instruments are formed by placing brass tubes in steel dies through which a ball of lead is forced. The softer metal forces the brass tubing to the shapes of the surrounding walls of the die.

Many of the former wood winds, including clarinets, oboes, and flutes, are now made of brass, nickel, or silver. In the instruments using slides and keys, where airtight fitting is of primary importance, spring steel and the various body metals have helped to reduce wear. This is particularly true of the trombone slides, which must be airtight and yet move quickly and smoothly in the hands of the musician.

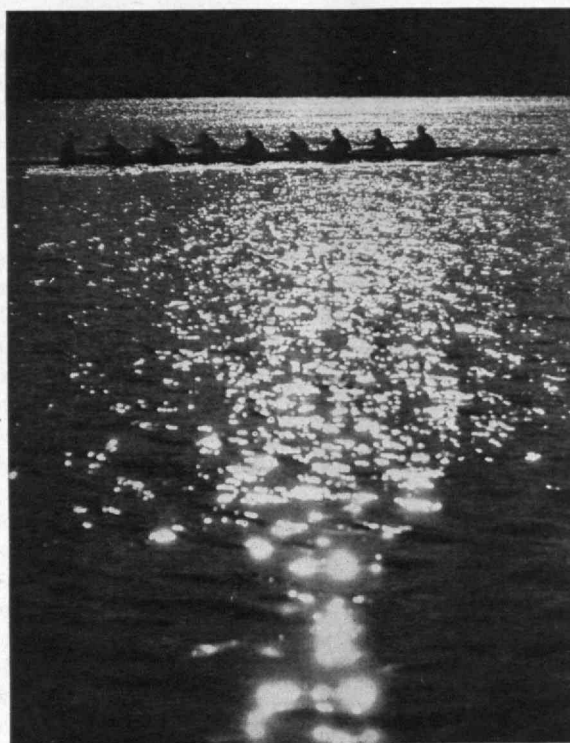
Left: These huge fins are the directorial controls of the giant Brazilian Clipper (see page 8). Below: Construction progresses on the bridge at Sagamore across Cape Cod Canal. This and its companion structure at the south end of the canal are part of the Government's plan to make the waterway available to larger ships



Bourke-White from Seibelman



Fay, '93, Spofford, '93, and Thorndike, Engs. Photo by Orne



Coöperation

Rittase

Pooling Efforts in Research

Scientific Provincialism Must Give Way to Concerted Action

BY SAMUEL C. PRESCOTT

COÖPERATION in research is not a novel idea, but it is only in comparatively recent decades that it has taken a great part in the advancement of either pure or applied science. In his recent presidential address to the Royal Society, Sir Frederick Gowland Hopkins stated that two of the most characteristic features of modern scientific developments are, on the one hand, the extent to which coöperation between different classes of scientific workers — medical men, physicists, biologists, chemists, engineers, and others — is again and again required for the solution of a scientific or industrial problem; and on the other, the extent to which discoveries or advances in one field or industry find direct and ready application in many other quite unrelated sciences or industries. Reference is made, for example, to the problems of visual research, on which a report was published on "Colour Vision Requirements in the Royal Navy," but the findings of which are of high value in the merchant marine, the railways, in relation to road traffic, and in some industrial operations. This is but one example of coöperation among the governmental agencies which are promoting the

INTEGRATED INVESTIGATIONS
ON A NATIONAL SCALE —
INTER-DEPARTMENTAL RE-
SEARCH AT M. I. T. — RELA-
TIONSHIP OF PURE AND AP-
PLIED SCIENCE — SPIRITUAL
BY-PRODUCTS OF JOINT UN-
DERTAKINGS

advancement of science in Great Britain.

We need not cross the ocean to find equally significant illustrations. Our own National Research Council has made excellent use of its opportunities to stimulate concerted action in many lines in science, engineering, and agriculture. Most readers will without difficulty recall, or at least know by hearsay if not by

more definite personal knowledge, the really marvelous developments which resulted from the united efforts of scientific workers during the Great War, and of the later benefits that have been derived therefrom.

But even before our participation in the world cataclysm of 1914-1918, the mechanisms for coöperation between research and industry had been established and were functioning in a really effective, even if limited, way. For nearly three decades, but especially in the last 15 years, coöperative researches have been conducted on what may be called a national scope. Some of the best known examples of these, especially in engineering, are the splendid studies which have been made possible through the resources, and under the sponsorship, of the Engineering Foundation, which gave opportunity

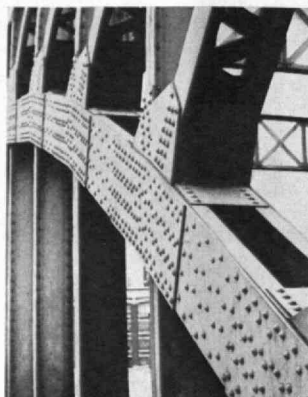
for concerted action by the four great national engineering societies. This Foundation, the aim of which is advancement of the public good through research, owes its existence to the wisdom and the generosity of Mr. Ambrose Swasey. His breadth of vision and public spirit, activated by belief in the value and necessity of coöperative action, led him to provide the endowment, given "for the furtherance of research in Science and Engineering, or for the advancement of any other manner of the profession of engineering and the good of mankind." The four "founder societies" associated, aided by many educational institutions and other agencies, have organized and carried out many educational projects and many notable investigations. Incidentally Mr. Swasey's statement that "Research is the greatest force for progress in all the world — this urge to find out why," and his epigrammatic definition of Engineering as "a bridge connecting Science and Industry — a double-track bridge for two-way traffic," have tersely expressed the fundamental purposes and character of most of these investigations.

In many of these splendid projects our own Institute of Technology has taken part, officially or through the service of members of its staff. One thinks at once of the long, arduous, and carefully extended investigation on the Properties of Steam, in which Professor Keyes and others connected with the work of the Laboratory of Physical Chemistry have taken a prominent part; of the research on Hollow Crested Weirs, which was prosecuted to success in our Hydraulic Laboratories; the studies on Earth and Foundations made in part at our Laboratory of Soil Mechanics; the Marine Piling Investigations in which a great part of the biological work on the study of *Teredo*, *Limnoria*, and

other marine borers was done in our Biological Department; the research on the Strength of Gear Teeth, conducted in our Mechanical Engineering Department; and that of Nitrogen in Welds carried on in the Department of Electrical Engineering.

But these concerted attacks on fundamental problems of broad interest have not been confined to engineering. On the pure science side the Institute has shared in numerous researches under other auspices, of which the Petroleum Research in which Professor Norris so ably assisted is but one conspicuous example, and the country-wide studies on Public Health problems another. Numerous others might be cited, but no attempt is here made to give a complete list.

While there thus seem to be numerous examples of distinctively national coöperative research in specialized fields, both in America and in Europe, it is of interest to note that the prime inception of this type of research seem to have been largely of American origin and to have been proposed and vigorously championed by William Barton Rogers in his plan for the Institute and immediately after its organization. Certainly Technology has held it as an ideal and a duty from the beginning. Possibly in this idea may be found, as Mr. Swasey's statement would suggest, a factor in our rapid industrial progress in certain fields. This view is tenable when we recall the splendid work of the Bureau of Standards as developed by Dr. Samuel W. Stratton, which became one of the most potent influences in bringing industry and science into helpful mutual relations. Perhaps the best example of continuous international coöperation is found in the work of the International Committee on Weights and Measures, but this was kept up for many years largely through the influence and efforts of one man, Dr. Stratton, already mentioned as Director of the Bureau and later President of Technology. Another example is found in the World Power Conference, and



Porter

THE ROAD TO ACHIEVEMENT IN RESEARCH

THE worth while aim of investigation is to advance human knowledge. The successful accomplishment of investigational work in advancement of knowledge requires that advantage be taken of the present state of knowledge. The sum total of this knowledge is too great for any one man to encompass. This is true of even the subdivisions of scientific knowledge. Therefore, the day of academic isolation of the research worker is past. Research in scientific fields, as in all others, must progress through the pooling of information and effort in a common cause.

Specialization is a necessity because each individual branch of science has been so greatly broadened in its accumulated data that no man can now hope to know all the aspects and relationships in even one specialized field. Unaided, he becomes helpless through the very specialization which has contributed to his competence. The remedy lies in increasing contact and mutual assistance between workers in related branches of study.

Specialization must combine with coöperation. In no place is this more true than in an educational institution. Departmental organization necessary for administrative purposes must not hinder contact and coöperation.

Contributory effort, as opposed to ruthless individualism, is characteristic of the day. Splendid isolation is a thing of the past. There are interrelations of scientific interests as well as interrelations of personal, national, economic, and social aspects. In all fields of endeavor it is becoming clearer that even though he may travel faster (for a time) who travels alone, it is pulling together that counts for the long haul. Not even a Cunningham or a Bonthron can cover a mile in the time made by a relay of four good quarter-milers, each contributing his own quota of coöperative efforts.

Karl T. Compton

we may hope to see many instances of international activity in fields of science, engineering, and social inquiry in the future.

Institutionally, however, there appear to have been relatively few attempts, either at Technology or in any other university or technical school, to build up strong, well-organized programs of coöperation in diverse departments or members of different staffs in the study of research problems with multiple scientific interests. It seems to the writer that development in this line could not fail to be highly fruitful, and need in no way restrict individual initiative and activity. On the other hand, extension of such well-planned programs would have a highly stimulating reaction, would ensure selective action resulting in the choice of worthwhile problems for investigation, would broaden our knowledge of the work being carried on in the various departments at M. I. T., and could not fail to have a powerful resultant effect on our general teaching. Such attempts as have already been made have indicated clearly the advantages of combined effort in the attack on research problems which have broad multi-departmental implications, and supply a strong argument that we should attempt to develop a unified and cohesive organization of fellow scientists for the pursuit of investigations which must perforce require the careful and judicial thought of men with different lines of special study and experience. Our previous attempts at coöperation, although highly successful, have been largely personal in character, or intra-departmental rather than inter-departmental.

It is gratifying that recently, as a result of administratively activated committee work, research has been undertaken in special fields in which the needs of industry or the demands of special knowledge have been so apparent and so compelling as to bring about official action. These broad aspects of research, particularly in the field of technical application requiring numerous types of special investigations, are now being conducted by special committees on a number of projects, and are sure to yield results of great value. Reference is here made to the coöperative efforts in the study of Corrosion which are now being carried out by representatives of the departments of Chemical Engineering, Electrochemistry, and Metallurgy; and to the Heat Transfer Research, in which the work is shared by staff members from Physics and Chemical and Mechanical and Electrical Engineering; and to Acoustics Research conducted under Electrical Engineering and Physics.

Aside from these immediately utilitarian projects, there are the many inviting and important border fields of half-knowledge which lie between or overlap the well-recognized domains which we think of as the legitimate sectors of each special discipline but which are actually without fixed limits or barriers. It is not intended in the slightest degree to intimate that all research should be, or can be, of this class, for there are vast fields of pure science in which we should make every effort to carry out our most penetrating investigations in the search for new facts, new principles, new truth. Nor can all scientists work most fruitfully in

joint undertakings. However, is it not true that for most of us the incentive to pursue investigations in either pure or applied science, whether to discover remote and abstruse facts, to establish new laws or principles, or to develop some process of technical significance, is enhanced when we work in companionship, and are actuated by a human interest motive as well as a purely intellectual one?

It is evident that here at Technology, with its variety of professional departments in science and engineering, mathematics, economics, and languages, and the cordial and unified institutional spirit which exists, coöperative efforts should succeed to a remarkable degree. In most forms of engineering research it would seem that this bringing together of individuals from different disciplines is most desirable or even necessary and likely to lead to the most fruitful results. In the so-called pure sciences it may not always be the case. Here possibly a man may work better alone, but even here there would seem to be often a great advantage in coöperative effort. The research worker in the pure sciences is never at a loss for a research problem, and generally finds it in his own specialized field of study, where his interests are probably deepest and his previous experience best fits him to delve for a new fact, or to follow a new lead. Whether this will bring him to results of



Orne

significant value in promoting the real advance of knowledge and of his science or in adding to the welfare, comfort, or satisfaction of mankind, which perhaps we may regard as objectives in research, cannot always be foreseen in advance. It not infrequently happens that the helpful criticism of a colleague or the assistance of a specialist from another department might greatly lighten labor and increase efficiency. It is reasonably evident that there are many problems classed as pure science which are in reality composites, and in which there would be obvious advantages in the association of workers from the contributing fields. There are many others in which this mutual relation is almost imperative. To illustrate this point it may be stated that research in most subdivisions of our own field of applied biology, as in certain aspects of bacteriology, biochemistry, food technology, industrial hygiene and sanitation, must have recourse to special knowledge of physics and of chemistry if the results are to be of highest value and stand the most severe tests as to their worth. A survey of the recently collected list of over 400 investigations now being pursued at the Institute will show a surprising number in which some degree of coöperation between departments might be employed with distinct advantage. This is especially the case in those rapidly multiplying researches in the border zones between the natural sciences, or in special aspects of engineering which involve particular and accurate knowledge in one or more branches of scientific theory.

In this connection it may not be out of place to suggest the intimate relation (*Continued on page 36*)

A Mighty Man Was He

The Vermont Blacksmith Who —

1. Invented the electric motor
2. Edited the first electrical journal
3. Operated the first electrically driven printing press
4. Promoted the first stock company for manufacturing an electrical device
5. Invented the electric railway

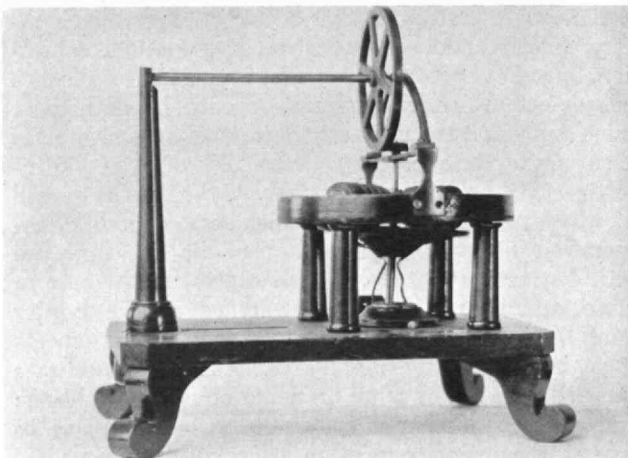
BY L. L. THWING

THE invention and development of the waterwheel, the steam engine, the locomotive, the dynamo, and the electric motor have all been of the greatest industrial importance. Every engineer has at least heard of Francis, Watt, Stephenson, and Siemens in connection with the first four, but few seem to know who invented the motor. Yet it was invented here in the United States, in New England, and was publicly exhibited in all the large cities of the East at various times over a period of several years.

The telegraph is commonly believed to have been the first device to make any practical use of electricity, and in fact it was, but the motor was invented before the telegraph. It was 100 years ago in July, 1834, that Thomas Davenport, a blacksmith of Brandon, Vt., first succeeded in producing rotary motion from the electro-magnet. This motor embodied all the essential principles and devices of modern direct current motors. It had a revolving armature, a commutator, and brushes. This is not local tradition, but a matter of record. United States Patent No. 132 and Davenport's model, now exhibited in the Smithsonian Museum, are ample evidence of his achievement.

In addition to being the inventor of the motor, Davenport was the editor of the first electrical journal and a promoter of the first stock company for the purpose of manufacturing an electrical device.

We now know that Davenport's invention was premature. He needed cheap electricity, and the dynamo was not available until after 1860. If coal had



U. S. National Museum

THE MAGNET.

DEVOTED TO ARTS, SCIENCE, AND MECHANISM.

NO. 1.

NEW YORK, JULY 4, 1840.

VOL.

LIGHTNING IN HARNESS.

THE PRINTING PRESS WORKED BY
ELECTRICITY.

EXHIBITION.

THE GREATEST DISCOVERY OF THE AGE.

The attention of the scientific, mechanical, and curious is respectfully invited to the exhibition of LIGHTNING IN HARNESS, which is this day opened at No. 4 LITTLE GARY STREET (Little Green street is between Broadway and Nassau street, and runs from Malien Lane to Liberty street).

The exhibition of Davenport's Electro-Magnetic Engine will continue open this day, from 9 A. M. to 10 P. M.

The engine is of sufficient power to drive a printing press, and those who witness the exhibition will find it a most interesting and instructive sight.

THE PROPRIETOR HAS BEEN INDUCED TO EXHIBIT THE

Electro-Magnetic Engine especially upon this day, for what can be more appropriate than, upon the anniversary of our nation's birth, to point the Declaration of Independence, and send it by LIGHTNING throughout the whole world.

By Appointment to the President of the United States, July 4, 1840.

PROSPECTUS OF THE MAGNET.

We present our little work to the public with great confidence, and for several excellent reasons: First—It is printed upon a new and improved continental press. Secondly—This press is worked by our electro-magnetic engine. Thirdly—Both are wholly American. The first number of the paper is published on the anniversary of our national independence, and offered at a cheap rate to the patronage of the lovers of truth, and those who devote time and labor to mechanical and scientific pursuits.

Though the investigation of electro-magnetism will form the principal feature of our journal, it is not intended to confine its columns to that interesting science; we shall fill our pages with such

authentic matter as may come within our reach upon all scientific and mechanical subjects.

With respect to electro-magnetism, it is the intention of the publisher to advance tangible proof that this power has already triumphed in moving machinery. It is also his design to make known all the experiments made by him since December, 1833, which go to corroborate his views on this subject, with wood cuts, illustrating various models and machines, together with the laws of electro-magnetism, and the great advantage this wonderful power has over steam, in regard to safety, cheapness, and convenience. In the mean time, the experiments of others, more experienced in the science of Electricity, Galvanism, Magnetism, and Electro-Magnetism, will be noticed, in order that the reader may get a general idea of the science, and the laws by which they are governed, and by which we are enabled in controlling and working this power, and a general agent. It is not our intention to make the subject tedious, and the article too laborious, for the sake of a few facts in general.

We shall treat upon the different branches of science, and the various inventions and improvements that shall be made known, as also those at present in operation, together with such interesting news and interesting matter as shall appear from time to time.

Any objections or difficulties that may be presented by different individuals, in regard to the application of electro-magnetism to a motive power, we shall be pleased to receive, and shall consider it a favor to communicate with them, through the columns of the Magnet.

Several scientific gentlemen of our city, Boston, and Philadelphia, have already engaged to become contributors to our columns, and we trust we shall be able to make our paper interesting and useful to all classes.

TERMS.—The Magnet will be published every two months, upon fine paper and beautiful type. Two Dollars and Fifty Cents a year in Advance, and Five Cents for each copy thereafter.

The terms are such that each subscriber, after the first copy, will be enabled to send the terms are fully explained.

Persons at a distance may send a Dollar bill, and the paper will be sent according to the time paid for. Advertisements inserted on the cover upon the usual terms.

For Transients are authorized to act as agents for the Magnet.

THOMAS DAVENPORT,

New York, July 4, 1840.

N. Y. Museum of Science and Industry

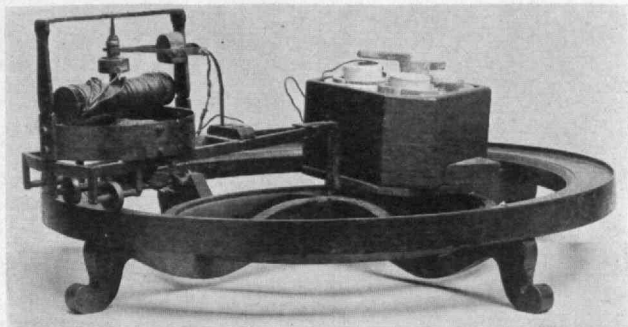
Davenport's second magazine venture struck from a press driven by an electric motor built by him. Note his prophetic reference to the importance of his electro-magnetic engine

cost \$100 a ton in Watt's time, the steam engine would have remained a scientific toy until a cheaper fuel was discovered.

In 1830 no practical use for electricity was known. The only electromagnets in the world were about the size of electric bell magnets and were wound with a single layer of wire. In 1831 Professor Joseph Henry at Albany Academy was building the first powerful electromagnets ever constructed. One of these was acquired by a foundry at Crown Point, N. Y., and was used to detect and remove iron and steel from brass and copper scrap metal. This was probably the very first industrial use of electricity and the fame of this mysterious device spread over the countryside and even across Lake Champlain and up Otter Creek to Brandon, Vt., where Davenport heard of it and was possessed with an overwhelming desire to own it. Fortunately we have Davenport's own story of his first attempt, as published in the *Plattsburg Republican* of May 20, 1893.

"During this season (1833) I learned there was a powerful 'galvanic battery' at the Penfield and Hammond Foundry at Crown Point and was later informed that it was constructed by Professor Henry at Albany. It was stated that it would lift a common blacksmith's

◀ Patent office model of Davenport's motor (1837)



U. S. National Museum

Davenport's electric railway

anvil. Crown Point being situated only about 25 miles from Brandon, I determined to journey there and gratify my curiosity and purchase, if possible, this wonderful battery as it was then called, but as the proprietors were not at home, I did not even have the pleasure of seeing it. I then hurried to Albany, but as Professor Henry was not in town, I had no means of knowing how or where to go for information respecting the apparatus I desired to purchase."

The story is continued by his brother, Oliver, who was a tin peddler and clock tinker, traveling through the country with the once familiar wagons decorated with brooms and tinware.

"I was peddling when Tom sent me word to come to Brandon and go with him over to Crown Point and buy the magnet. I returned to Brandon and Tom and I started for Crown Point with the peddler's cart. There we saw the magnet. It was shaped like a horseshoe, the arms 10 or 12 inches long and spreading six inches, wound with wire back and forth, perhaps an inch thick. The price of the little thing was \$75. This was more money than we had and I tried to persuade Tom to leave it but he said 'No' he must have the magnet, and he proposed that I should sell goods from my peddler's cart and raise the money. So I went ahead and began to auction off the stuff. The goods sold pretty well and I remember how I got cheated in striking off a dustpan for three shillings, supposing it to be 50 cents, not knowing the difference between a York shilling and a Vermont shilling. It was soon evident that no \$75 could be got out of the auction but Tom was not going back without his magnet. And so, while I was busy auctioneering, he swapped my horse for a poor beast and by putting the boot of the horse trade with all the other money we had in our pockets, we got the magnet."

Thomas Davenport later described the magnet as he first saw it as follows: "An electric magnet to which were attached by copper wires two sets of copper and zinc cylinders which were placed in weak acid in earthen quart mugs. When the poles of the magnet were placed on the face of a common anvil, the magnet adhered strong enough so that the anvil could be lifted by it."

Brother Oliver's idea was to exhibit the magnet and get some return on their investment but Thomas insisted that he must take it apart and see how it was

made. Oliver begged him not to run the risk of destroying it, but Tom was determined as he wanted to make another even stronger. That night (continuing Oliver's account) "he and Emily, his wife, set down and she with pen, ink, and paper and he with the magnet, and he began to unwind the wire. She had a fine education and was as enthusiastic as he was and wrote down exactly how the wire was wound on and all about it from beginning to end. The next thing he did was to go to his blacksmith's shop and make another horseshoe many times larger than the first. Then he and Emily wound it. First a coating of glue was put on the iron and then it had to be wound with silk. Emily tore up her silk wedding gown into strips and used that. The coils of (bare) wire had to be wound on without touching or else the whole thing would be spoiled. When finished with silk between each layer of wire, the magnet was a grand one and would lift a ton a minute."

Thomas Davenport wrote a history of his progress in invention that has never been published. The manuscript is now owned by the Vermont Historical Association. He soon saw the possibility of producing rotary motion and continued to experiment. At this point in his experiments he says: "My mind will not rest with so great a prospect before it of furnishing a valuable substitute for the murderous power of steam. . . . [Boiler explosions were very common in 1834.] I returned home and continued my experiments. (Continued on page 39)

ELECTRO-MAGNETIC ASSOCIATION.

THOMAS DAVENPORT of Brandon, Vermont, and RANDOLPH COOK of Saratoga Springs, in the State of New-York, as Proprietors of the ELECTRO-MAGNETIC MACHINERY, for which said Davenport has obtained Letters Patent of the United States, and for which measures have been taken to secure Patents from the several countries of Europe; by Edwin Williams their Attorney and Agent thereunto fully authorized, hereby throw the entire interest of said invention for the United States, (with the exception of the New-England States, reserving however the waters thereof, for the benefit of this Association,) and for England, Ireland and Scotland and the British Dependencies; also for the several countries of the continent of Europe, into a Joint Stock Association, the principles of which Association shall be as follows, viz:

The Stock shall consist of THREE THOUSAND SHARES, only: one thousand of which shall be disposed of by the said Agent according to his best judgment and discretion, and from the proceeds thereof, the sum of FIFTY THOUSAND DOLLARS shall be appropriated for the benefit and to promote the objects of said Association, in the following manner and for the following purposes, viz:

1. For building Models and Machinery, and for testing the utility of said Invention, and for giving to the same its greatest possible value for the benefit of the Stockholders; (the constructions so made to belong to the Association); also for securing the exclusive use of said Invention in Europe for the benefit of the Association:—estimated at \$45,000.
2. To said Davenport and Cook for the amount already vested by them in Models, &c., which are to become the property of the Stockholders. 2,000

\$50,000

Assignable Scrip or Certificates of Stock shall be issued in the names of the Proprietors and signed by the Agent of the Association for the THREE THOUSAND SHARES above mentioned, of which two thousand Shares are reserved as aforesaid by the Proprietors.

Within ninety days from the date hereof, or as soon as the one thousand Shares shall have been taken up, a meeting of the Stockholders shall be called for the purpose of organizing a Company, which shall proceed to elect a Board of Directors and other officers, and the adoption of the necessary regulations for the government of the Company.

At all meetings of the Stockholders each Share of Stock shall be entitled to one vote, except that the Proprietors, or their assigns shall not vote on the Stock reserved for them, to an amount of Shares exceeding one-sixth part of the said Shares, during the first year after the organization of the Company.

New-York, March 3, 1837.

FORM OF CERTIFICATE.

No.

ELECTRO-MAGNETIC ASSOCIATION.

is entitled to
assignable Shares
of Stock in the Association formed in Thomas Davenport's Patent
for Electro-Magnetic Machinery; the whole number of Shares
in said Association being three thousand, and subject to the Articles
of Association dated March 3, 1837.

New-York

1837.

The Unwarranted of Cook, Proprietors

Shares.

AGENT.

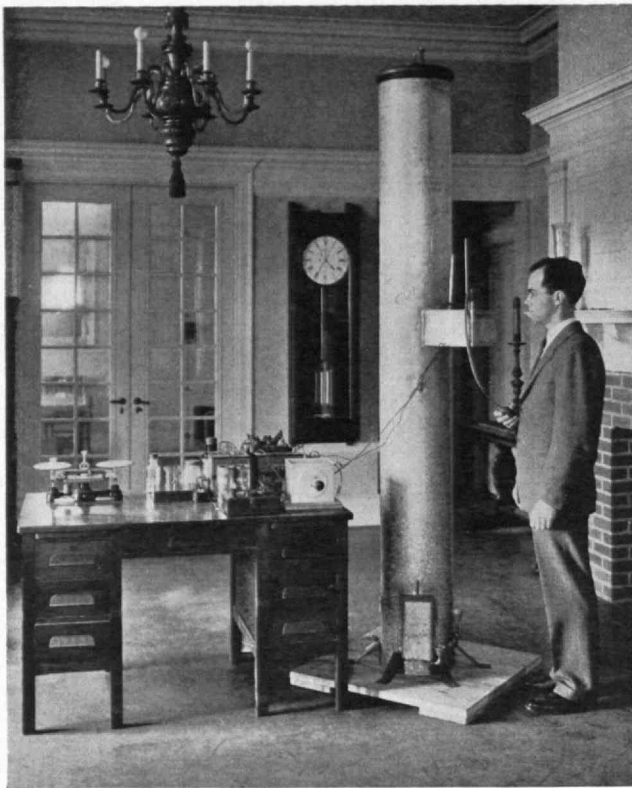
Prospectus and stock certificate form of the Electro-Magnetic Association (1837), the first stock company for manufacturing electrical machinery ▶

Shares for sale by the Agent, EDWIN WILLIAMS, No. 76 Cedar-street, New-York. Present price of Shares 100 Dollars, payable in cash.

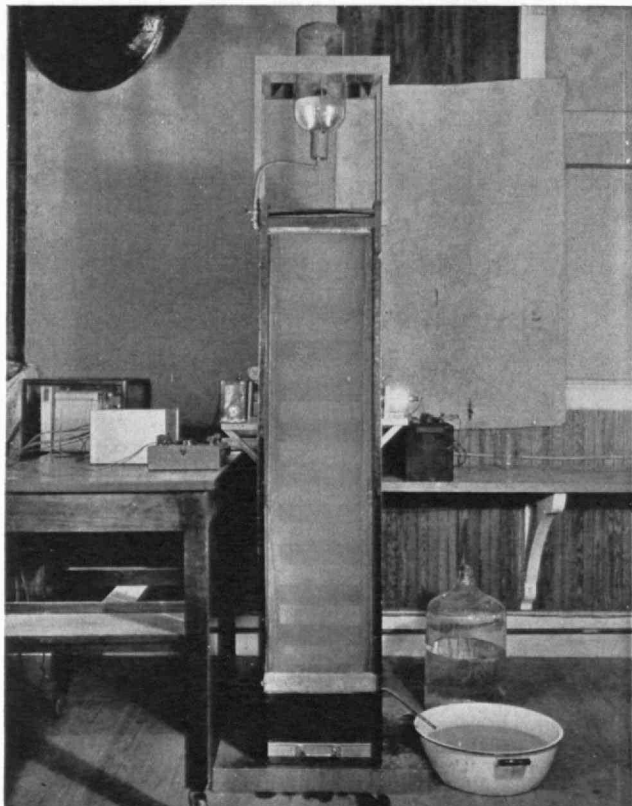
Science at

*The Story of the Research Station Where
Generates Millions of Volts, Johnson
Workers Carry on Collateral In-
Uniquely Pleasant*

BY EDWARD



Above. Henry G. Houghton, Jr., '27, fog dissipator, using apparatus designed by him at Round Hill to measure the reduction in vapor pressure caused by dropping hygroscopic material. Below. Artificial fog chamber in which the first demonstration of the dissipation of fog by finely divided hygroscopic particles was given. The fog consisted of condensed low pressure steam and through this the hygroscopic material (calcium chloride) was sifted down from a fine screen in the top of the chamber



SPECTACULAR demonstrations such as the dissipation of fog and the generation of the world's highest direct voltage have called attention from time to time to the unusual research station operated by M.I.T. amid the surroundings of a magnificent summer estate on Buzzard's Bay. What is the story of this unique outpost of science and what are some of the problems that are being attacked there?

The "Round Hill Project," as it may be called, was initiated in the late fall of 1925 through the generosity and acumen of Colonel Edward Howland Robinson Green and the foresight of the late Dr. Samuel W. Stratton, both of whom appreciated the possibilities of the Round Hill environment and location for the investigation of special problems. Colonel Green placed portions of his estate, which is near South Dartmouth, Mass. (near New Bedford), at the disposal of the Institute, and in other ways made possible the prosecution there of valuable research.

Starting with a modest program, the station has steadily expanded. By the end of the last academic year its activities included, among other things, an extensive investigation of the physical properties of fog, fog dissipation, the development of delicate thermocouples and amplifiers responsive to the minute and rapid temperature changes produced by sound waves, a detailed study of the source of the "electrical" noise which limits the smallness of the delicate signal which may be amplified or observed, a mathematical investigation of the general antenna problem, the high-voltage Van de Graaff generator development, and the associated

*General view (excluding high-voltage laboratory) of the
Round Hill Experiment Station*

Fairchild Aerial Surveys



Round Hill

Houghton Dissipates Fog, Van de Graaff Measures "Hot" Sound, and Other vestigations in an Environment and Stimulating

L. BOWLES

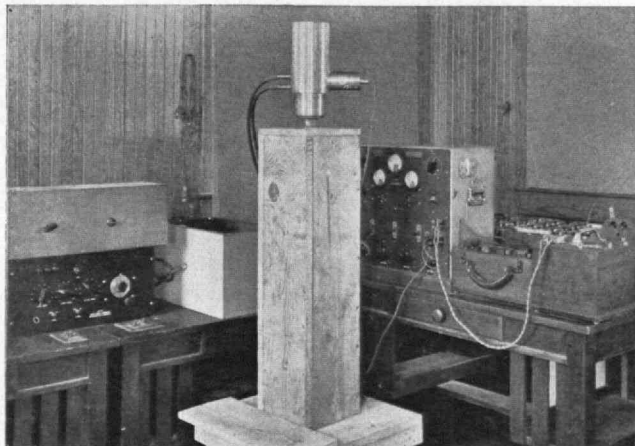
nuclear research. In this list of problems, all but the high-voltage generator project have been under the jurisdiction of the Department of Electrical Engineering; the generator project falling into the Department of Physics.

These individual projects fit in as parts of a general plan of research which may be better understood by an outline of the growth of the Project as a whole.

At the outset it was determined to make use of existing facilities on the estate. Colonel Green having been active and very much interested in radio communication, there were excellent possibilities for radio research. His station WMAF was known as one of the first and most progressive of broadcast transmitters. In fact, the early broadcast radio activities of the Colonel were of a genuinely pioneer nature. Among other things, his insistence on wire program transmission, a new idea, opened the way for the ultimate development of what is today an essential aspect of the radio broadcasting art.

In setting up the radio research program at Round Hill, which naturally fell to the Department of Electrical Engineering, the Institute had to consider the distance separating the two points, Cambridge and Round Hill, as well as the staff and facilities. It was decided to start with work that could be handled without too much initial expenditure, and to expand as progress dictated. The nature of the estate's radio facilities suggested that for the first, at least, a study of the vagaries in the propagation of short radio waves would be appropriate. Therefore, a single research assistant was

Apparatus illustrating a use of the sound thermometer in measuring sound intensity

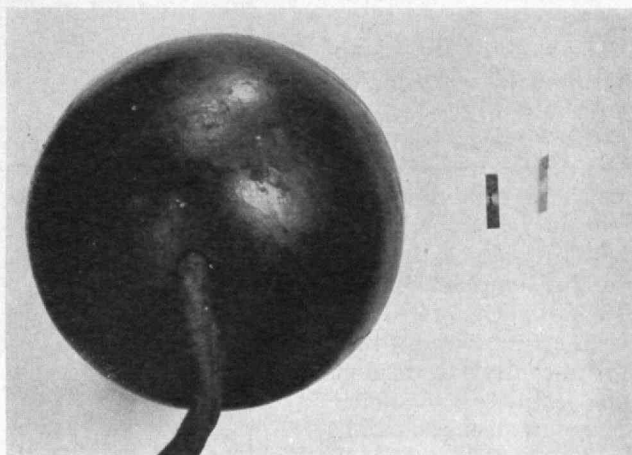


The Temperature of Sound

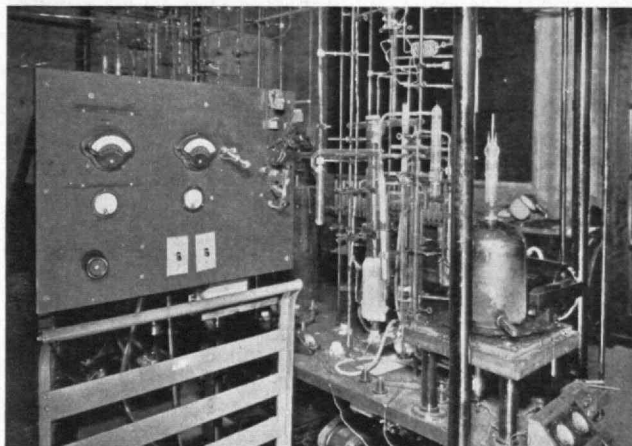
SOUNDS from a jazz orchestra are frequently described as "hot," but it has remained for Institute scientists to devise new and more accurate methods for determining the heat of sound. Instead of measuring sound variation in terms of pressure, as does a microphone, the ingenious device described in the adjacent article records for the first time the alternating temperatures produced by traveling sound waves in air. This "sound thermometer" uses metal strips so incredibly thin that a million of them together would make a pile hardly more than an inch thick, and the amplifier used to jump up the current generated by thermoelectric action in the strips is capable of responding to one one-hundred millionth of a volt.

The thin metal strips or films are so delicate that they do not disturb the field they are measuring as do other devices, and the thermocouple, with its special amplifier, is about 100 times more sensitive than previous couples. It is capable of measuring not only minute variations in temperature produced by sound waves but of recording these variations when they are occurring at many thousand times a second. Already it has been used to measure the adiabatic heat produced in a sound field up to frequencies of 10,000 cycles per second, and its range can be extended to 300,000.

The delicacy of the thermocouple makes it an excellent device for measuring sounds (supersonic) which the ear cannot hear, heretofore an almost impossible task, and it has also been adapted for light measurements.



Above. The disk on the right is the "sound thermometer" described above. Note its smallness when compared with the standard microphone measuring device at its left. Below. Apparatus used to make the thin metal strips atom by atom. This interesting process, known as sputtering, consists of knocking atoms out of a cathode metal by bombarding it with positive ions. The spray thus produced collects on a nearby film to form the strips



procured to give full-time aid to James K. Clapp, '23, of the Communications Division of the Electrical Engineering Department, who was to give part-time to this work problem.

Although this early work was necessarily limited in extent, it resulted in the development of a successful technique in the reception and comparison of short radio waves of lengths where fading is prevalent and in the collection of valuable data on the "cut off" phenomenon in which, over a given distance and at a given time of day and season, radio waves within a given frequency region and of frequencies above a critical value cease to affect transmission.

This first piece of work emphasized the need of carefully stabilizing the frequency of the radio signals and pointed out many of the experimental difficulties incident to an extended radio wave propagation research program. As a consequence, considerable time was subsequently spent in the development of an adequate "primary" radio frequency standard as well as convenient means for precisely determining the frequency of a source—a transmitter, for example.

The work of Mr. Clapp in this field represents a contribution in which the Institute may take pride. His origination and development of the system of frequency control and calibration in which a multi-vibrator source of currents of a multiplicity of frequencies is synchronized with a crystal-controlled vacuum tube oscillator of much higher frequency has, it may be said, "standardized" practice in this field. By means of Clapp's method, there can be made available a calibrating frequency spectrum in almost any desired increments of frequencies far below, as well as in the region of, and above, the standard crystal frequency.

By the spring of 1928 Colonel Green had the work on the Round Hill airport well under way. The Institute, realizing the menace of fog, particularly to air navigation, and appreciating the prevalence of fog in this region, proposed to Colonel Green an extensive investigation of the fog navigation problem in which use was to be made of the airport facilities then about to be completed.

It was felt that the reasonable approach to the solution, if any, of the fog navigation problem, would be arrived at best by a careful study of relative possibilities of the transmission of intelligence through fog by means of electric waves in the light region of the spectrum, the radio region, particularly the short wave, and finally by means of sound waves both sonic and supersonic.

The radio wave propagation investigation already under way fitted in admirably with the proposed fog investigation. It was planned to learn just where rain

and fog would affect radio transmission, what, if any, sound frequencies would be best suited, what invisible light rays, if any, including those between the infra-red and radio regions would be adaptable for effective transmission of signals through fog and, finally, if there was a preferred frequency in the visible region for transmission of light through fog.

Two of the features of the general program, which it was not possible to attack at the time, are briefly described here for general interest. One of these, a part of the extended problem to include fog navigation included, among several radio locating and landing adjuncts, a method of leading aircraft to the surface of the landing field along the sloping intersection of two sheet beams of short radio infra-red light waves, a method similar to one in experimental use today. The second, a feature of the radio program, proposed the transmission of a radio frequency signal, at perhaps two widely separated frequencies to ensure continuity

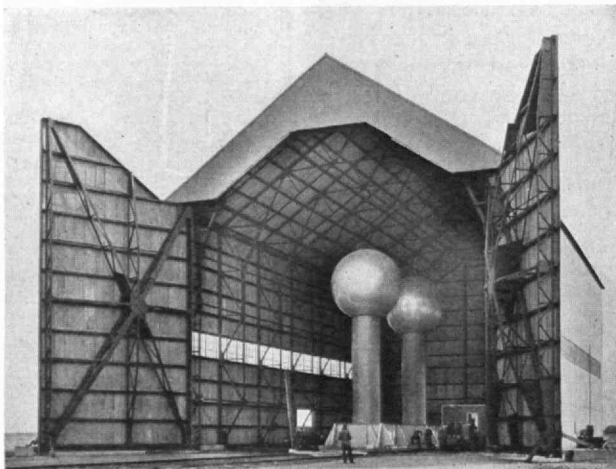
of transmission, to be used as a frequency standard and as a source of time, at first locally and perhaps ultimately nationally or even internationally. By means of such a plan, not only would the world have a single reference frequency but clocks could be rigidly coupled to this radio time shaft with the expectation of realizing a single world time in place of the present awkward system.

In the fall of 1928, it was our good fortune to have Dr. Julius A. Stratton, '23, join the Round Hill staff as scientific adviser.

Shortly thereafter, Henry G. Houghton, Jr., '27, was added to undertake the immediate problem of a study of light transmission through fog. It was out of this particular research as a beginning that the dissipation idea successfully demonstrated this summer was evolved.

During the fall and spring of 1928 and 1929, with the staff now housed in the "bachelor's" quarters on the estate, plans were made for the investigation of the space radiation or field strength characteristic in the region surrounding a radio antenna. Difficulties had already been encountered in making any such investigations over the ground at the frequencies contemplated, for each road or other object of any size left its electrical impress. Furthermore, there was the measurement problem in the space above the ground. These factors suggested that an ideal set-up would comprise an antenna over uniformly conducting sea water together with a small dirigible balloon for making the measurements.

This research was later made possible by the assistance of Mr. Paul W. Litchfield, '96, and Colonel Green. Mr. Litchfield, President of the Goodyear Zeppelin Corporation, placed at our (Continued on page 26)



High-voltage and atomic research laboratory at Round Hill

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

New Faces

THE INSTITUTE welcomes to its Faculty this autumn ten new members whose achievements have distinguished them in industry and education. To them we extend our own greeting, confident that they will contribute new riches to our scholarship and teaching and that they will in turn find stimulation and happiness in our community.

From the University of Wisconsin has come Dr. Warren J. Mead, eminent teacher and widely known consultant, to take charge of the Department of Geology. The petroleum industry has lost one of its most active research engineers in Walter G. Whitman, '17, formerly Associate Director of Research of the Standard Oil Company of Indiana, new Head of the Department of Chemical Engineering.

Professor Roy W. Carlson, noted for his research in the structural materials for large dams, and Dr. Robley D. Evans both come from the University of California. The former is Assistant Professor of Civil Engineering, and in addition to his teaching he will carry on research in cement and concrete. Dr. Evans joins the staff of the Department of Physics as Assistant Professor.

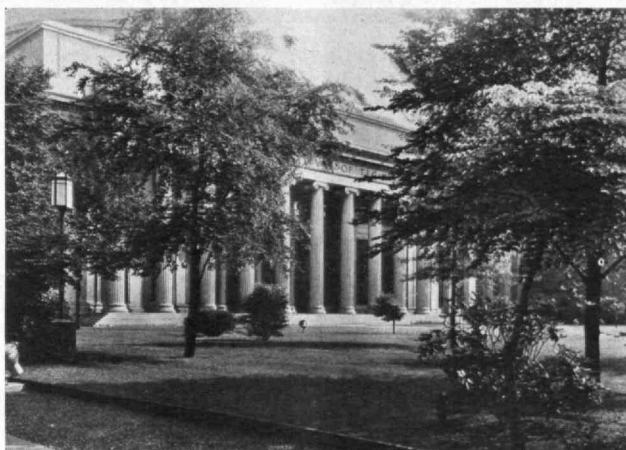
Dr. Joseph H. Keenan, '22, formerly Chairman of the Department of Mechanical Engineering of Stevens Institute of Technology, is now Associate Professor of Mechanical Engineering at M.I.T. He is well known for his research in the thermal properties of steam. From the same institution comes Professor John B. Fife, now Exchange Professor in the Department of English and History. His place at Stevens is occupied for this year by Professor William C. Greene of the Institute's staff. Under the same plan of exchange professorships, Professor J. F. Byrne of Ohio State University has joined the staff of the Department of Electrical Engineering, and his place at the Ohio institution has been taken by Professor Harold L. Hazen, '24.

Dr. Edwin S. Burdell, '20, who also comes from Ohio State University, is now Associate Professor of Sociology in the Department of Economics and Social Sciences.

Two other notable additions to the staff, who bring to their tasks valuable experience in their fields, are Dr. Francis Bitter, formerly of the staff of the Westinghouse Electric and Manufacturing Company, and Alfred V. deForest, '12, formerly of the American Chain

Company and more recently engaged in consulting work, who becomes Associate Professor of Mechanical Engineering. Dr. Bitter, now Associate Professor in the Department of Mining and Metallurgy, is widely known for his research in the mechanical and magnetic properties of metals, and for various practical applications of his work in metallurgy. Professor deForest's research at the Institute will include studies of the dynamic properties of metals.

May these welcomed newcomers enjoy here, as do so many already, enduring personal and professional friendships as well as opportunities for further achievement.



The Colonnade of a summer's morning—M.I.T. Photo

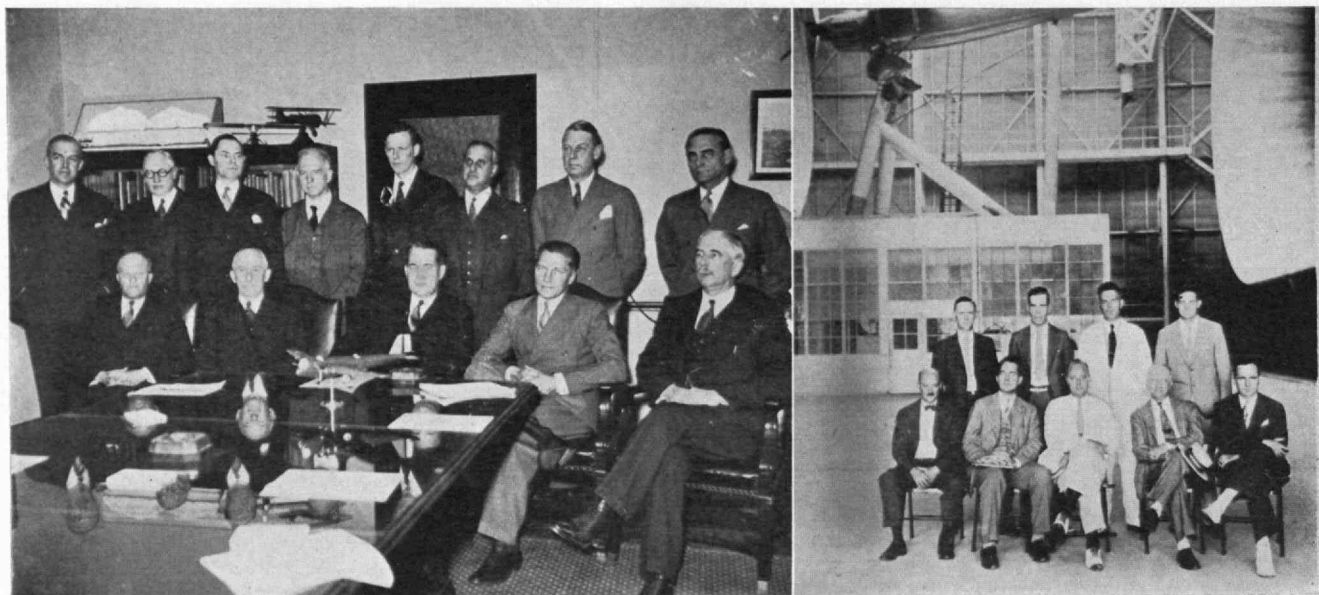
Light of Discovery

MASTER detective of science is the spectroscope, whose analysis of multicolored light, visible and invisible, continues to yield fresh clues to a diversity of puzzling phenomena. Last July, 130 scientists journeyed from England, Canada, and all parts of the United States to compare notes at the Institute's second international conference on spectroscopy.

Instituted a year ago by Professor George R. Harrison, Director of Technology's unique Spectroscopy Laboratory, the initial conference attracted more than 100 experts in metallurgy, chemistry, physics, astronomy, industry. A new departure this year was the inclusion of biologists and medical researchers, who related advances in spectroscopic diagnosis and treatment of disease. The meetings over, ten visitors remained to carry on special research in the Institute's excellently equipped "spec lab."

Essential is the spectroscopic method to the work of the modern industrial chemist and metallurgist, to the laboratory worker in textile, mineral, and biological manufacture. Executives to whom the control of impurities in materials constitutes a problem are rapidly discovering a need for trained spectroscopists. Especially among Institute alumni is there widespread interest in methods of applying such analysis to problems of their particular industry. Result: a 60% enrollment increase in summer spectroscopy courses at M.I.T.

Recent tasks undertaken by Institute spectroscopists include a study in collaboration with the staff of the Children's Hospital, Harvard Medical School, of lead and arsenic poisoning, and similar problems having to do with metallic elements in the blood.



Wide World Photos

The Nation's air services have been subjected to the close scrutiny of several important commissions this year, the memberships of which have included a half-dozen or more Technology men. President Compton, Edgar S. Gorrell, '17, and James H. Doolittle, '24, served on the Army Air Corps Committee which reported last summer.

Above at the left is the National Advisory Committee on Aeronautics which directs important research, particularly at Langley Field. Seated, left to right: Major General Foulois, Dr. Orville Wright, Hon. Edward Warner, '17, Eugene Vidal, and Dr. C. G. Abbot, '94. Back row, left to right: W. P. MacCracken, G. W. Lewis, John J. Ide, Dr. L. J. Briggs, Col. Charles A. Lindbergh, Harry F. Guggenheim, Brig. Gen. Henry C. Pratt, Capt. Arthur B. Cook.

On the right is the President's Advisory Aviation Commission during a visit to Langley Field to inspect the new full-scale wind tunnel built with \$478,300 from PWA Funds. Seated, left to right: J. C. Hunsaker, '12 (Head of Technology's Department of Mechanical Engineering), E. P. Warner, '17 (Vice-Chairman), F. K. Lane, Jr., A. J. Berres, and J. C. Cone, Secretary. Standing: J. F. Victory, H. J. E. Reid, E. R. Sharp, and E. A. Cutrell. The chairman of the commission, Clark Howell, was inspecting air lines in Europe at the time the above picture was taken.

In 1938

FOUR years hence, in September, 1938, the International Congress on Applied Mechanics will hold its fifth meeting in Cambridge with Technology and Harvard University as joint hosts. At the fourth meeting, but recently concluded in Cambridge, England, the Institute had a distinguished and active representation. Dr. Vannevar Bush, '16, was invited to deliver one of the general lectures of the congress, and his discussion of "Recent Progress in Analyzing Machines" created wide interest.

Results of the Institute's research in cavitation, one of the most important problems in hydraulic engineering, were discussed by Dr. Jerome C. Hunsaker, '12, Head of the Department of Mechanical Engineering, who disclosed that by means of the Edgerton high-speed motion picture camera it had been determined that cavitation was accompanied by a definite periodicity. This is believed to establish for the first time the mechanical nature of hydraulic cavitation.

Dr. Heinrich Peters, who has been carrying on important research at the Institute, reported the results of his studies on the separation of turbulent boundary layers, a problem of great interest in aerodynamics and hydraulics. Professor Alfred V. deForest, who joined the staff this autumn, also attended the meeting.

The American members of the organization committee which will make arrangements for the 1938 meeting are President J. S. Ames of Johns Hopkins University, Dr. Hunsaker, Professors Stephen Timoshenko, of the

University of Michigan, and Theodor von Karman, of the California Institute of Technology, sometime lecturer at M.I.T.

Cosmic Search on High

ONE day last July, while the country lay shriveling under heat and drought, three men and a truck pushed their way through snowdrifts and biting gales up the highest motor road in the United States. Bound for the tempestuous peak of Colorado's Mt. Evans were Professor Ralph D. Bennett, Instructor Gordon S. Brown, '31, and Henry A. Rahmel, '33, of the Institute's Electrical Engineering Department, to test Dr. Arthur H. Compton's newest cosmic ray intensity meter.

Largest, most sensitive instrument of its kind, the machine weighs 3,200 pounds, automatically records photographs, is compensated for pressure and temperature changes (new feature). The heart of the apparatus is a large sphere of lead containing a chamber of argon gas compressed to a pressure of 750 pounds per square inch. It is the first of seven to be built and stationed throughout the world in a continuous five-year cosmic ray survey directed by Dr. Compton, financed by the Carnegie Institution. The object of the Mt. Evans expedition was to test the new device under a variety of field conditions.

At 14,120 feet above sea, the party maneuvered the heavy meter into place, lashed tents to boulders to keep from being blown off the mountain. With the low barometric pressure (18 inches) making every move exhaus-

tive, the three men endured freezing 50-mile-an-hour winds, snowstorms at minus 20°, followed in half an hour by sunshine and heat of 60°. Fog hid their outstretched hands, then vanished in two minutes so completely as to reveal Pikes Peak 65 miles away. Frequent electric storms sent sparks running from scientific ears, noses, and upraised fingers, literally stood hair on end.

Their tests completed, Professor Bennett and his aides descended to ship the meter to Dr. Compton's University of Chicago laboratories for calibration.

In the proposed five-year survey, intensity meters will be stationed in New Zealand, Peru, Mexico, Greenland, and Chittenden, Md., while two will be moved about periodically to various locations. One will be stationed at Technology for a year to measure characteristics of cosmic radiation in New England. Purpose of the investigation: to correlate variations in the intensity of cosmic radiation with solar or sidereal time, variations in the intensity of the earth's magnetic field, sunspot frequency, and other phenomena.

Encouragement

TO 678 estimable students of M.I.T. went approximately \$159,000 in scholarships this autumn. A group of 122 first-year men and women who entered with high marks and good character qualifications received \$26,000 in freshman competitive scholarships. Among the undergraduate body, 261 men, 11 women were awarded \$31,000. Another \$7,000 was divided among winners of alumni regional scholarships and miscellaneous awards. In the graduate school, 270 students, many of them younger members of the staff who are working toward higher degrees, received \$95,000 in scholarship aid.

All Technology scholarships (as well as \$160,000 of loans already authorized for 1934-35) represent, not cash, but credit toward tuition. Their judicious dis-

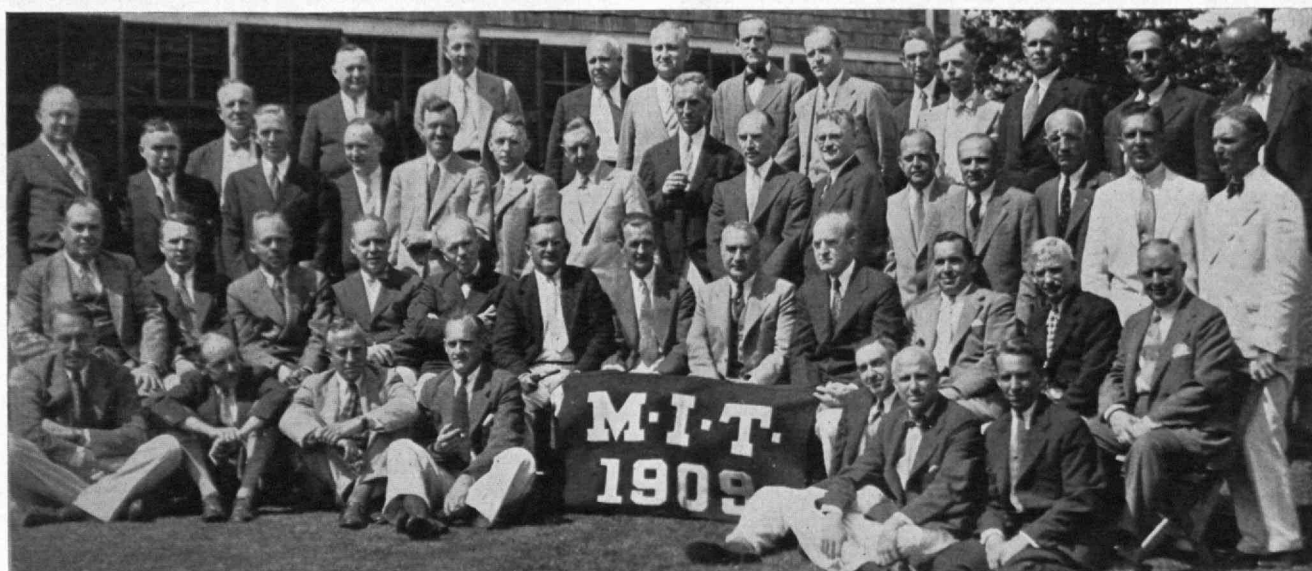
bursement serves not only to alleviate depression's pinch, but determines in many cases a student's choice of school or the financial possibility of continuing his education.

Fog Around the World

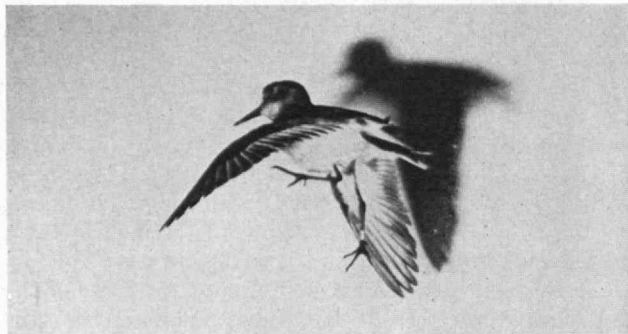
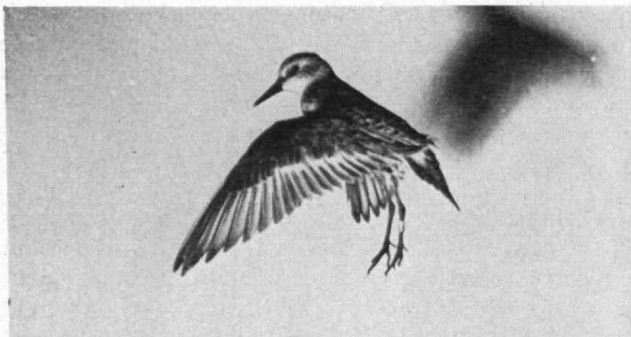
BECAUSE the weather is a subject of universal interest, no announcement from the Institute in recent years has attracted greater international attention than the news that a method of dissipating fog over limited areas had been successfully tested at Technology's research station on the Round Hill estate of Colonel E. H. R. Green at South Dartmouth, Mass.

American newspaper readers perused the story over their ham and eggs on the morning of July 22. At the same hour it was a subject of luncheon conversation in London and Paris. Merchants of Bombay read the news at dinner, and to Japan and Australia the story had sped by cable and radio to be read (time differences considered) at breakfast on the following day.

To those, if any, who have not read the news of the fog dissipation tests, it might be explained that the method, developed by Henry G. Houghton, Jr., '27, of the Department of Electrical Engineering, consists of spraying a solution of calcium chloride from hundreds of specially designed nozzles fitted to a 100-foot pipe suspended horizontally some 30 feet in the air. The solution, falling in the form of minute and accurately gauged particles, collects the water vapor in the air and carries it to the ground in the form of rain. This results in lowering the relative humidity and the dissipation of fog over an area within reach of the spray. In the first test a path approximately 100 feet wide, 30 feet high, and about 2,000 feet long was cleared of fog in a few minutes. A wind, blowing fog through the curtain of spray, helped to extend its influence.



Most classes make their 25th milestone the occasion of their greatest celebration. The reunion of the Class of 1909 last June was a notable event. Back Row: Critchett, Whitaker, Cook, Gilbert, D. G. Haynes, Parker, Maynard, W. H. Jones, Healy, Spencer, Weill, Wiswall. Standing: Loud, Winchester, R. L. Jones, Finnie, Wallis, Marshall, Pepper, Chase, Gray, Perry, F. J. King, Freed, R. L. Smith, A. L. Shaw, L. H. Johnson. Seated: F. J. Lange, Willard, Bullens, H. L. Clark, F. R. Faulkner, Fisher, Kelly, Main, Gram, Lord, C. A. Haynes, Colson. Front Row: Scharff, Stephenson, Ellis, Emerson, Davis, Nickerson, Merriman



M.I.T. high-speed photographs by Harold E. Edgerton, '27, and Kenneth J. Germeshausen, '31

High-speed studies of a sandpiper in flight

The Late Professors Phelan and Walker

IT IS indeed exceptional for the Institute to experience, within the space of a few weeks, the loss of two prominent and valued members of its staff, as it did this summer in the deaths of Joseph Warren Phelan, '94, Professor of Inorganic Chemistry, and William Hulst Walker, non-resident Professor of Chemical Engineering.

For two-score years Professor Phelan was continually in service in the Department of Chemistry at the Institute. At the time when he began his career as a teacher of chemistry, revised methods in the presentation of the fundamental principles were being seriously contemplated. Together with his colleague, Professor A. A. Blanchard, '98, a radical change in the teaching of elementary chemistry and laboratory instruction was initiated. Through painstaking efforts, through a patient, sympathetic, and remarkable understanding of young men fresh from secondary schools, he ably guided not only the development of the students in his charge, but also the growth of a course of instruction which today is without parallel in this country.

Although his primary interest was in the training and instruction of students, he nevertheless took an active interest, along with other members of the department, in attacking and solving many of the complex and pressing industrial problems. For a number of years Professor Phelan served as consultant for many industries in various phases of chemical work. He acquired from this association with practical problems of a chemical nature, a rich experience that was at all times available for students and staff colleagues as well. His advice and counsel were sought by all as can be readily testified to by many generations of Technology students, to whom he was respectfully and affectionately known as "Beaker Joe."

Identical in years of service of Professor Phelan, Professor Walker also served the Institute. Without doubt, his outstanding achievement was the establishment of the Department of Chemical Engineering at Technology over 30 years ago. He possessed the foresight to perceive that within a short time industry would be demanding men trained not only in chemistry, but in engineering as well. Through his efforts and organization the Institute was the first school to offer this type of work. It is noteworthy that since its inception the fundamental character of the course of instruction has remained practically unchanged, which serves as proof of the validity of his pedagogic principles. This type of instruction has been constantly used as a model in developing chemical engineering courses in other colleges.

A few years later he was instrumental in organizing the Research Laboratories of Applied Chemistry, keeping the Institute in the front in training men in the technique of research connected with industrial problems. At the same time it placed the Institute in a position to extend these facilities to those industries which needed aid. With the progress of chemical engineering, Dr. Walker, with the aid of others, launched a further advance in bringing about the School of Chemical Engineering Practice, which was designed to give instruction and training under industrial conditions. Honored by the many leaders in chemical industry that he trained and by the government for his war services, still his work at the Institute will remain an enduring monument to his ability.

Impetus to Sports

WITH THE opening of school this autumn students found the new Barbour Field House completed and ready for their use. The building, named in honor of the late Edmund Dana Barbour, demonstrates anew the thoughtfulness of the Institute in providing adequate facilities for the welfare and pleasure of its students.

Architecturally, the new structure harmonizes with the other Technology buildings and it nearly doubles the facilities for students participating in track, basketball, wrestling, squash, and other sports. The locker room contains 750 full-length lockers, and in addition there are two large and well-equipped rooms for visiting teams. Special precautions have been taken for maintaining the highest degree of sanitation in the shower room, which has 24 units. The rubbing room is well designed and equipped and the various coaches have comfortable and spacious quarters.

The new field house is an all-Technology project, which well demonstrates the scope of the Institute's professional resources. Treasurer Horace S. Ford, chairman of the committee which planned and directed construction of the building, had the coöperation of Dean William Emerson of the School of Architecture, Professor Walter C. Voss, Dr. Allan W. Rowe, '01, and Mr. Henry E. Worcester, '97. The design was supervised by Dean Emerson and Professor Harry W. Gardner, '94. Professor James Holt, '19, worked out the system of ventilation, while Professor Carlton E. Tucker, '18, had

charge of the electrical system. Professor Voss had general direction of construction, which proceeded under the direct supervision of Albert V. Smith, '20, and the contractors were Chase and Gilbert (Royce W., '09) of Boston.

Mr. Secretary

UNDER THE compulsion of genuine affection, we risk upsetting the proverbial imperturbability of Professor Charles E. Locke, '96, by a note on his work as Secretary of the Alumni Association. He has brought to the Association a vast personal acquaintance with Technology alumni. Without detriment to his duties as Professor of Mining, he has labored prodigiously, and with marked success, to vitalize organized alumni activity and to make it a force of ever-increasing value to the Institute and to alumni themselves.

Under his régime, Technology clubs have become notably more active, a result attributable not only to President Compton's alumni visits and the work of recent Association presidents, but also to Professor Locke's stimulation. Twenty people from Technology attended over 50 alumni gatherings outside of Boston last year under the gentle but persistent shepherding of the Secretary. Directly in charge of the distribution of the cinema "Technology," he has, with the generous help of alumni, made it available for a hundred or more showings. Council meetings have improved in attendance since he has made it embarrassing for any member to miss more than his allotted number of meetings.

Collaborating with Harry J. Carlson, '92, Chairman of the National Nominating Committee, he is now translating into action the provisions of the new constitution and apparently even that job has not disturbed his proverbial imperturbability. His geniality and energy are suffusing the entire alumni organization and contributing toward that new unity and exuberance of Technology spirit everywhere becoming manifest.

Fiscal Facts

RECENT years have decreased the Alumni Association's income by more than \$10,000 a year, have decreased dues payers over 2,000 a year (to 5,555). During the fiscal year the Association received about \$26,700 from dues and other sources, spent \$28,300. Result: a deficit of \$1,600, which will be made up by a Review surplus.

Other A.A. financial facts: Salaries account for 5.5% of total expenses, The Technology Review, 57.8%; invested permanent funds (which includes the large life membership fund) unavailable for operating expenses total \$50,000.

Reunions Revised?

THE EDITORS invite readers of The Review to send in comments on the proposed reunion plan described in the following letter which President Smith has sent to class secretaries and club officers:

"Your advice is desired on a matter of importance to Technology.

"Originating in a period when group social gatherings were the order of the day, Technology established a once-in-five-year alumni reunion plan. These reunions had no connection with class five-year or other reunions. In the opinion of many alumni, this type of reunion appears to be out-of-date, and it has been suggested that some other plan be tried.

"With the approval of the Alumni Council, a special committee has been appointed to study this matter and bring in a formal report, with a reunion plan, for discussion at the October meeting of the Alumni Council. The committee has outlined a tentative plan, and in order that this plan may be as complete as possible before its formal presentation, I am asking a number of active alumni to give me their candid opinions of the proposed plan. This plan, subject to whatever changes may be necessary, is outlined briefly below.

"In place of the five-year all-Technology reunions there would be substituted an annual Alumni Day. As Commencement is on a Tuesday, it is proposed to have this Alumni Day on Monday before Commencement. All classes would take part, but special attention would be given to bringing back to Technology those classes celebrating their five-year reunions. It would be expected that the five-year classes in particular, and possibly other classes, would hold their class reunions by themselves at or near Boston—for example, on Cape Cod—over the preceding week-end, and then come to Technology on Monday for Alumni Day. This would give to the returning alumni the necessary Technology contact, which many alumni feel so desirous and which President Compton is exceedingly anxious to bring about. One detail of this plan might be to have the Alumni Day each year in charge of the particular class holding its twenty-fifth reunion that year.

"On Alumni Day open house would be held at the Institute, with athletic events, especially crew, hoped for, and other meetings of particular interest to graduates arranged for. Any desiring to stay on for a second day would be welcome at the Commencement exercises.

"Alumni Day would be concluded by a large alumni dinner where it would be possible to have present not only those within easy commuting distance of Boston, as is now the case for the mid-winter dinner, but also all who have attended Alumni Day from a distance, particularly those of classes holding five-year reunions. This dinner would constitute the annual meeting of the Alumni Association instead of the local mid-winter Alumni Dinner.

"It has also been proposed that the Alumni Dinner on Alumni Day take the place of the mid-winter Alumni Dinner, and that in lieu of the latter there might be a mid-winter Alumni Smoker or convocation of alumni of Boston and suburban alumni groups to promote greater activity among Boston and suburban alumni.

"Please let me have your candid opinion of the proposed plan, together with any other suggestions you have to offer. . . ."

Of the replies already received by President Smith, 58 were in favor of the suggested annual reunion; 2 against. Comments received in The Review office will be tabulated and transmitted to the committee studying the problem.

SCIENCE AT ROUND HILL

(Continued from page 20)

disposal the dirigible *Mayflower* during the summers of 1929 and 1930. Colonel Green furnished the dirigible dock which was erected under the direction of the Institute in June, 1929.

As an initial, theoretical attack on the question of the penetration of radio waves through fog and rain, J. A. Stratton carried out an investigation to ascertain the facts as to the extent of scattering and selective absorption by these elements. His results indicated that for ordinary rain or fog the absorption due to these two effects is negligible for wave lengths greater than five centimeters. This important contribution was a forerunner of the later theoretical work on the subject of light penetration of fog and represented a valuable foundation step in the fog research program.

From this work came an idea that perhaps fog could be dissipated by heating it, heating the water vapor of its surroundings, or both, by the absorption of radiant energy. Dr. Stratton and also Dean Vannevar Bush, '16, studied the problem. Later Mr. Houghton obtained sufficient data on the physical constants of fog to point to its impracticability because of the excessive power required and the difficulty of finding a suitably efficient radiator at the critical frequency necessary.

As another part of the radio program, a research on radio-range beacons used in the guiding of aircraft was carried on at Round Hill by F. G. Kear, '27, then on leave from the Bureau of Standards, and H. A. Chinn, '27, in the late fall of 1931 and the spring of 1932. In this work, Mr. Kear was able to confirm his theory as to the cause of the disconcerting "night effect" or course shifting of the radio aircraft guiding beams, particularly at night, and to demonstrate satisfactorily a remedy—a specially spaced and excited double vertical antenna system. At the same time, Mr. Chinn suggested an entirely different solution in the form of a short wave (34.6 mc.p.s.) compact crossed-loop transmitter which he demonstrated to be highly satisfactory.

By the summer of 1930, both the amateur and experimental radio communication facilities at Round Hill had been brought to a commendably efficient state by Mr. Chinn, who by this time had also developed a quartz crystal-multivibrator frequency standard based on Clapp's work. This standard was made available to the amateur and experimental public by periodic transmissions. Its transmissions were so effectively handled that it was given an "honorable mention" in the 1930 report of the Chief of the Radio Division to the Secretary of Commerce.

In the fall of 1931, Dr. W. L. Barrow, '28, was added to the staff to assist Dr. Stratton in his work on the general solution of the radio antenna problem, a solution hitherto not obtained. It now appears that this undertaking nears its end, carrying with it the possibility of the solution of other problems of importance, including certain aspects of the radiation of sound energy from horns, and the effect of variable parameters such as inductance and capacitance on electric circuit behavior. Dr. Barrow has already contributed outstanding papers in this latter field which are almost sure

to open the way to important engineering applications.

A feature of the fog research program included the creation of a Meteorological Station at Round Hill. In the summer of 1929, Dr. C. G. Rossby, of the Institute's Meteorology Division, established such a station for routine weather observations, local forecasts, and the study of fog. The weather data were extremely helpful to the dirigible as well as to transient aircraft. Later owing to lack of sufficient funds, this project was in some respects curtailed, although since then the work on fog carried on by Houghton has had the advantage of valuable counsel with Dr. Rossby's division.

Since the fall of 1929, Mr. Houghton's work has included a detailed experimental study of the transmission of visible light through fog which led to a theoretical confirmatory study by Stratton and Houghton of the earlier observations which had indicated a slight preference in favor of blue light as a penetrant for the artificial (steam) fog. The theoretical results showed quantitatively the dependence of penetrability on the wave length of the light and the size of the fog particles. The results emphasized the need of an accurate knowledge of the fog particle size, size distribution, the number of particles in a given volume, and the exact nature of their composition, for example, their conductivity.

These physical factors Houghton set out to determine with the result that he has since developed a fog microscope for observing the size of captured fog particles, a fog water collector in order to study the fog water composition, and is about to complete in final form a simple device for quickly determining the amount of fog water and water vapor in a unit of a given fog. From the particle size distribution and total fog water data, it will be possible to obtain the number of fog particles in a unit volume, thus making possible a more accurate analytical estimate of light scattering. This information will help in making more accurate extrapolations by means of the Stratton-Houghton formula to regions on either side of the visible spectrum. The published results of this theoretical and experimental investigation of fog have already been used extensively by other investigators. The Round Hill fog laboratory has now become a notable center for work of the kind.

While investigating the chemical and physical properties of fog nuclei, Houghton was led to the idea of utilizing a finely divided hygroscopic substance in solid or solution form as a source of condensation nuclei to dissipate fog. A preliminary laboratory experiment on artificial fog worked splendidly. Further work on the mechanism indicated that the result was due not to a physical sweeping action but to the fact that the hygroscopic particles collected water vapor in their fall to the bottom of the chamber, thus reducing the relative humidity and causing the fog droplets to evaporate. This mechanism necessitated that the particles dropped be not too fine so as to form a suspension nor too coarse so as to act inefficiently as collectors of water vapor.

After a detailed and ingenious investigation of drop evaporation and growth this dissipation idea showed even more promise. Plans were made for an early outside test which was accomplished this summer by the industry of Houghton and his (Continued on page 40)

MAIL RETURNS

Are the Colleges in Line Today?

Editor's Note: There is much in the following letter, recently received by President Compton, with which many will ardently disagree, and offer excellent reasons for doing so. The letter, however, is so full of thoughtful criticism, is so temperately and clearly expressed, so full of illuminating personal experience, that *The Review*, with the writer's and President Compton's permission, takes pleasure in publishing it. Its author is John C. Sherman, '95, and both he and *The Review* welcome comment.

DEAR PRESIDENT COMPTON:

I WELCOME your suggestion that I explain more fully my attitude toward a college education and my disinclination to advise any potential students to go to M.I.T. or other colleges at this time. My own college experience, which left me in total ignorance of the essential facts of corporate organization and finance, market-exploration, business development, and creative effort, has contributed to this attitude, as has an intimate acquaintance with a young man I have had the opportunity of advising. Let me tell you about him. He started in at a small State University, in an unassuming town-setting among congenial people, to take and follow up such studies as appealed to him, whether they led on to a degree or not.

But while there he often visited me in my own field, the experimental plant of a large manufacturing company; saw my organized search for promising new products, and saw results realized at first through crude experimental apparatus and then in full-scale mill-production on apparatus created on improved lines in response to the experimental findings.

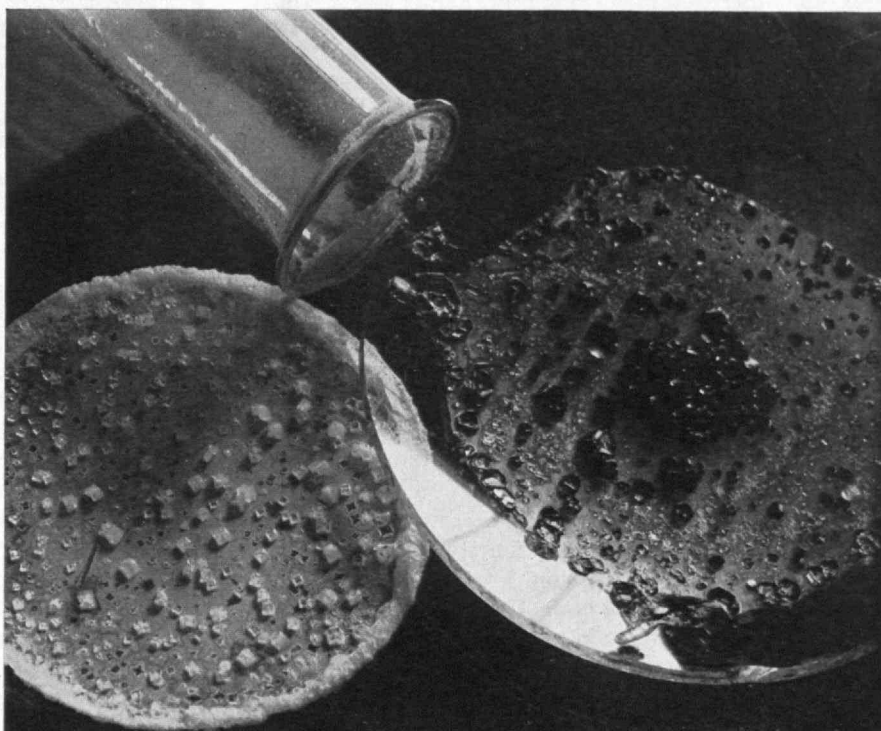
His enthusiasm for class-work evaporated and, as I had myself interrupted my college work for two years in a foreign laboratory (municipal power and lighting), I gladly assented to his wish to join my work. He withdrew from college and spent an entire year with me as an apprentice, observing the

operation of experimental processes and arming himself with self-taught data about them. He was presently asking for a chance to design, build, and run his own apparatus on his own lines to turn out products of improved and novel type for which he foresaw good markets.

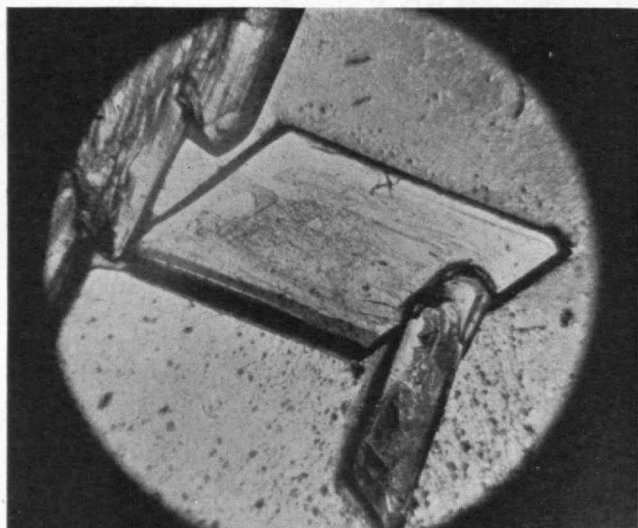
In short, here was a young man, of those qualifications which an alumnus would look for if he were selecting a candidate for Technology, actually flung into the center of a small-scale experimental plant devoted to the origination of forward-looking enterprises and presently permitted to take all the initiatory work, and conduct of the operations thence ensuing, which it might lie within his unknown power to take.

Stimulated by having this chance, he developed faster than any college man of my acquaintance. Finding himself often in need of technical facts, he dug them up. Finding himself confronted with a machine which functioned, to his mind, rather poorly, he was permitted to re-create it on his own lines, and always with useful, sometimes brilliant, results. Repeatedly in my own separate studies the help of this well-developed boy resulted in the substantial betterment of projects on which I with many years of experience had spent months of effort.

Such a boy, so situated, becomes genuinely educated. Feeling his need of a reliable source of business data to go along with his industrial experimentation and having abundant time, even while at work, he subscribed to an accredited home-study course, and from that source got presently more authentic knowledge of the business



Crystalline forms of common table salt, sodium chloride (left), and potassium dichromate (right)



C. Foerster

Rhombic crystal of copper sulphate as seen with a low power microscope (about 50X). The full growth of the more perfect crystal has evidently been interrupted by another which crossed its path

and financial world, its organization and the conduct of its affairs, than I ever had.

Thus he built up within himself an ability to produce and at the same time a familiarity with the procedures of business which one must have if he is to make headway. So doubly armed, he has repeatedly gone into conference with the heads of important manufacturing organizations in reference to the improvement of their field and has measured up to such contacts fully. In my case, by contrast, I was unhappy in business meetings for years after graduation from M.I.T., not knowing my way about.

The contrast between that boy and myself — at his age — is illuminating. Doubtless, on leaving Tech I could design dynamo-electric apparatus. Doubtless I had in my head a mass of engineering data which I now refresh by reference to the data books, but at graduation I had no conception of the fundamentals of industry or of corporate structure, finance, and management.

To my mind there is still the need for his attendance at some accredited college, perhaps for a year or two of carefully chosen lectures. I am too tied to my traditions to see any other way. He, by contrast, feels that it should not rest with a committee of professors, but with the young man himself, to govern his work as a student in a way to dovetail it into his daily work as an already skilled explorer of new products. He feels that, for him, educational opportunities of a high type are now too freely available, even while he works, to justify him in withdrawing from creative work to go, as he put it, "back" to the classroom, if in so doing he must weaken the chance he now has. His radical decision makes me anxious; but he may well be right.

THAT, in brief, is my reaction to your courteous suggestion that I write you. To the Institute I owe all I have done, but at a cost of years of groping after graduation which I hope he may be spared.

At various times I have had college men as helpers, but have not benefited much by the contact. I have been greatly helped by uncollared workmen with keen wits

and fertile imaginations whom I have needed only to advise and guide. The most highly educated college man I ever had could not brook the broadening of his opportunities beyond the groove of his training, became resentful of the importance laid on initiative as contrasted with the collection and decoding of extant data, and, though in the midst of the most congenial corporate group I ever saw, he blew up and quit cold.

I have never directed an asylum for inventors, and for mechanical inventions I have on the whole a rather low regard, but I do hold in the highest regard the resourceful mind, the creative imagination, the forward-looking eye. Such patents as arise are by-products of the situation, sometimes of supreme consequence. So far, during my years of effort in exploring new markets and preparing to enter them, the men who have helped me most toward that goal are the ones least hampered by sophistication, least inclined to move along the groove of acquired usage, for — at least in my experience — it is among these that the greater resourcefulness and initiative have been realized.

To light up this observation, let me say that I once knew personally the research group in a great machine works where scores of picked collegiates were busied with the improvement of shop technic and raw materials; and among these many men I knew only one who habitually and brilliantly worked out his thoughts in terms of public utility and "consumer demand"; of worldwide commodity-markets. Just one man who, as by instinct, carried his thinking all the way through from the crude ore to the consumer's door-step.

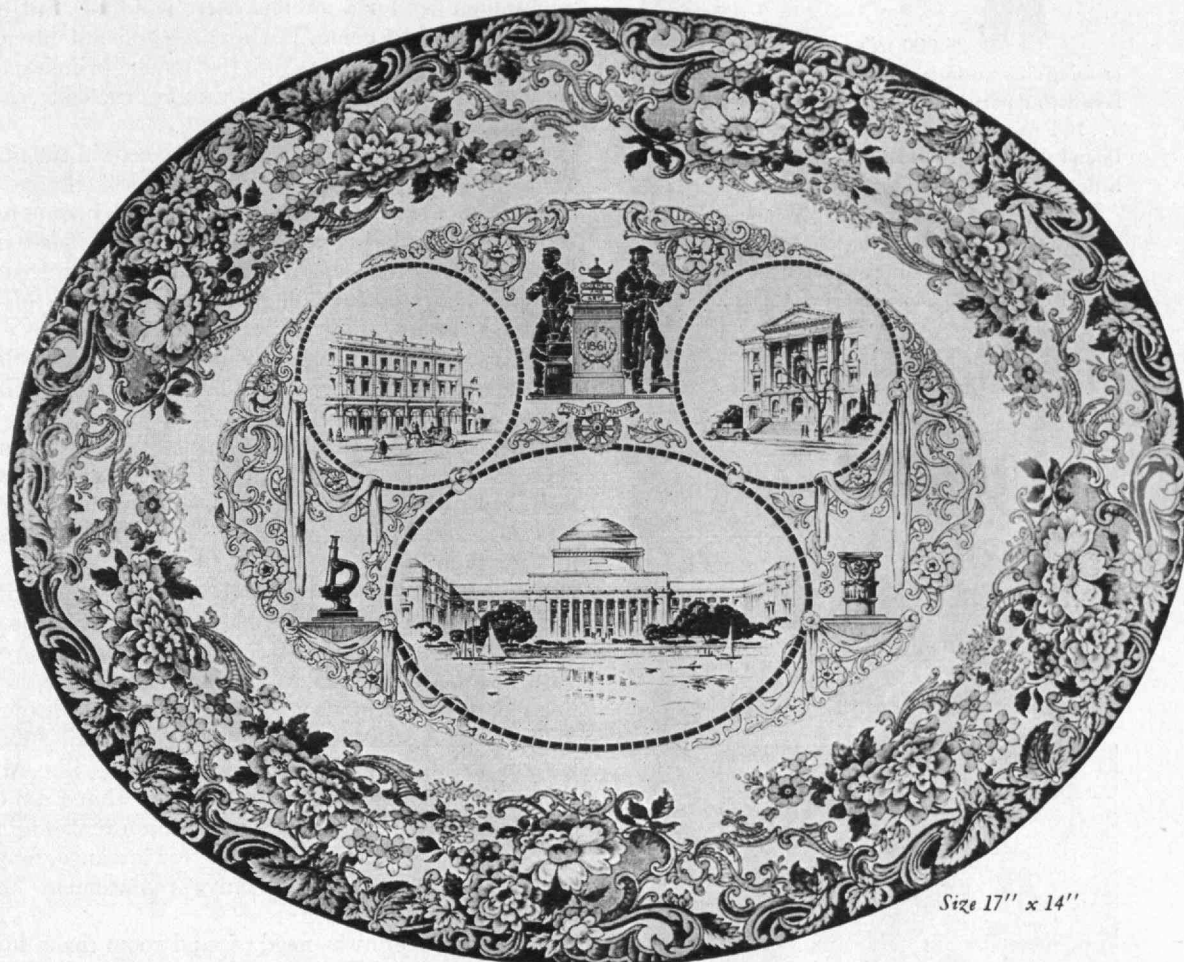
The point is that all we can do for any young man is to cut away dead wood, open up a path for his own voluntary progress, and see to it that such information as he can use is available to him. Even were we to try to put into him something foreign to himself we would doubtless put in the wrong thing. If the young apprentice I spoke of filled his mental reservoirs with the material he lacked, it was only because the pressing need of such material in some work already in hand incited him to "go get it."

THE part technical education is to take in our re-shaping world is not easily to be foreseen. Its utility to a prospective student involves the grave question: How much shall he pay for it in terms of arrested contact with the currents of life and of industry?

First of all, he must have a well-aroused individuality, an ability to apply to whatever problem he confronts some original and unconventional method. And yet, no original thinking occurred to me, along the lines of my college work, until years after graduation. My imagination was fertile, but it functioned best on lines unrelated to class-room work. It is as if I had had to open the meshes of my memory and let out some of the ashes of educational debris before I could get a clear draft for the fires of my own effort on technical lines.

It seems to me that the first challenge to the young man will be: not merely what he knows, but what he can do; what resources he has of voluntary effort toward some useful objective. An arresting thought at this time concerns the recent letting-out of many highly educated technicians from industries (*Continued on page 30*)

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MAIL RETURNS

(Continued from page 28)

overburdened at the top but short of markets. These young men ask for a job and there is no job; but if one of them were to come, not as an applicant obviously dropped from a previous job, but as one bringing a gift of clear, purposeful, creative thinking, the concerns too poor to hire him would still be few.

This is an era of rapid transition, except in the matter of developing personality. Students still change into business men with painful slowness, and by some means the work of preparing young men for useful places must, I think, be so re-oriented that in his middle 'twenties the college graduate shall possess, along with his specialized training, an awareness of the world he is entering. This awakening cannot be effected by a baccalaureate address. The college men I have known have had to begin all over again.

From the ranks of labor exceptional young men will arise, lifting themselves to responsible positions through sheer ability. We must look to see this occur oftener in this new world so largely and so justly being reshaped in their favor.

From what we were pleased to call the privileged classes will come candidates handicapped by these competitors unless they are better clothed than they are now with knowledge of the whole picture of industry and finance, so that they may logically become leaders of men. It is because the intensive and exhausting specialization we undergo in higher institutions like M.I.T. leaves us no leisure to acquire this view that I am dubious of its utility except for some chosen few. The mass production of electrical engineers, for instance, may not tally with a field for which only "replacement" needs are felt.

Years ago there was need of, and room for, a host of highly specialized technicians from whom no breadth of view was expected beyond the field of their own specialty; but that was before the voluntary association of industries into combines and into "pools" for the interchange of technical information and results. We recall the time when each concern entering some engineering field had to create its own "brain-machine" of hand-picked graduates, and then jealously safeguard it from the intrusion of competitors. This, in the electrical field again, resulted in warfare between powerful competitors each relying on its own costly intellectual equipment. From such a situation the way out was obviously to agree and to trade; to exchange and balance their private and exclusive "rights," designs, patents, by a system of licenses and agreements.

For 50 years, comprising the last quarter of the last century and the first of this one, Technology led in the supplying of specialized brains to a great number of small but progressive industrial concerns. But today a single man of exceptional ability can hold, for a generation, a position of technical dominance over some merger of many interests; and his numerous staff will serve his ends without individually rising to distinction for long years.

Thus a barrier to personal progress may exist through which no power can force its way except the power of personality. Ordinarily no junior member of a great corporate staff will rise to eminence unless, along with the training he got at school, (*Continued on page 32*)

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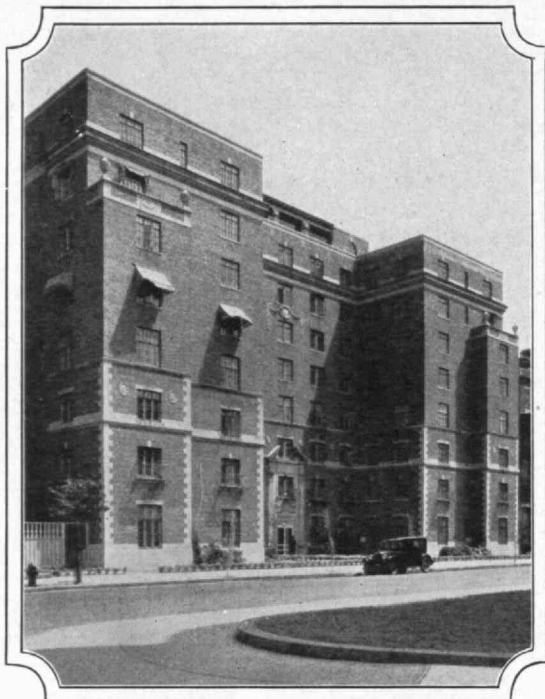
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MAIL RETURNS

(Continued from page 30)

he has some force of character which too lasting a pre-occupation with schoolroom work may indeed have helped to smother.

Whether my view of the situation be correct or not, the same trend is evident in the current shaping up of mercantile mergers, chain-stores, and the like. The man who could formerly have grown to own his own enterprise tends now to become a petty officer in a business organization of a scope so great that he cannot hope to become individually so important as the successful "independent" of earlier times became. In fact I know of no field in which this re-grouping of human units is not now going on. The trend offers to the exceptional man an ever-growing opportunity but a diminishing chance to the average graduate in any of the crowded fields of technical specialization.

The mere fact of having in one's head an exceptional fund of information — locked up, so to speak, in waiting — means no more than having a million dollars sealed up in some vault. There must be a field for its utilization before it can earn returns.

To illustrate this point two men come to mind. One of them, whom I knew years ago in the service of a great electrical engineering house, possessed an unusual fund of information upon the then obscure points of the induction motor. In fact he became so useful to his associates that he was required to devote many years to the collection and codifying of information for the use and the greater profit of others. The other man left Technology for lack of funds without graduating, took a humble position, mulled over his original views of industry, confided them to a boss big enough to listen and at last, in his prime of life, went back to a university to receive the honorary degree that his ability had earned, to a world-famous scientific association to become its president, and to a committee to receive the most coveted award for brilliant accomplishments in his field! This man had maintained his liberty of mind and person; submitted to no hampering restrictions, and continued to grow as a creator of values. He knew better than anyone else what things he should choose to learn, and was wise enough to choose those of importance both to the world and to himself.

That is what counts: the development of individual power.

TODAY that industrial society which our school has done so much to develop is being challenged. There are those who are testing, throughout a great nation, their belief that the several human activities can best serve the needs of all in a social order which does not regard individual power as a meritorious factor. If society, as we know it, is to change into a mechanism of human cogs it will change, not because technical ability has failed, but because education has not advanced on individualistic lines. The average technician, as such, can be sacrificed equally well to a republic, an empire, or a soviet, but the man of fully awakened personality is more likely to lead than be led.

(Concluded on page 34)

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## MAIL RETURNS

*(Concluded from page 32)*

In the learned professions, as a rule, specialized training follows a well-diversified college course which is, in some sense, an introduction to the wider intellectual life. If the student have in him that which may be broadened, it is brought out before he settles down to the preoccupations of his professional studies.

I observed at Johns Hopkins, in the post-graduate courses, that in many instances the students were cultivated gentlemen who had, for their thinking, a background on which had been etched some of the normal content of cultivated minds. Sometimes I wonder whether the restrictions and limitations of opportunity which so many thousands of our young specialists are facing might prove less formidable if the individual were, to begin with, a better-developed entity; and it may be that at last such institutions as ours must by necessity become post-graduate schools for a few most exactly selected young gentlemen and ladies.

It may seem that the outstanding men and youths I have spoken of, in reviewing my experiences, were of a class apart for which the customary educational program was not designed and that arguments drawn from their success are not pertinent to a review of educational methods. But I cannot believe it, for whatever it is that sets an individual apart from others is his own, and Everyman is, in some element, unlike all others.

Whatever of education shall enable this unlikeness to become ever more effective in its sphere makes for the evolution of what we call genius. With the spark of life itself comes some gleam of individuality, and it must be made to grow.

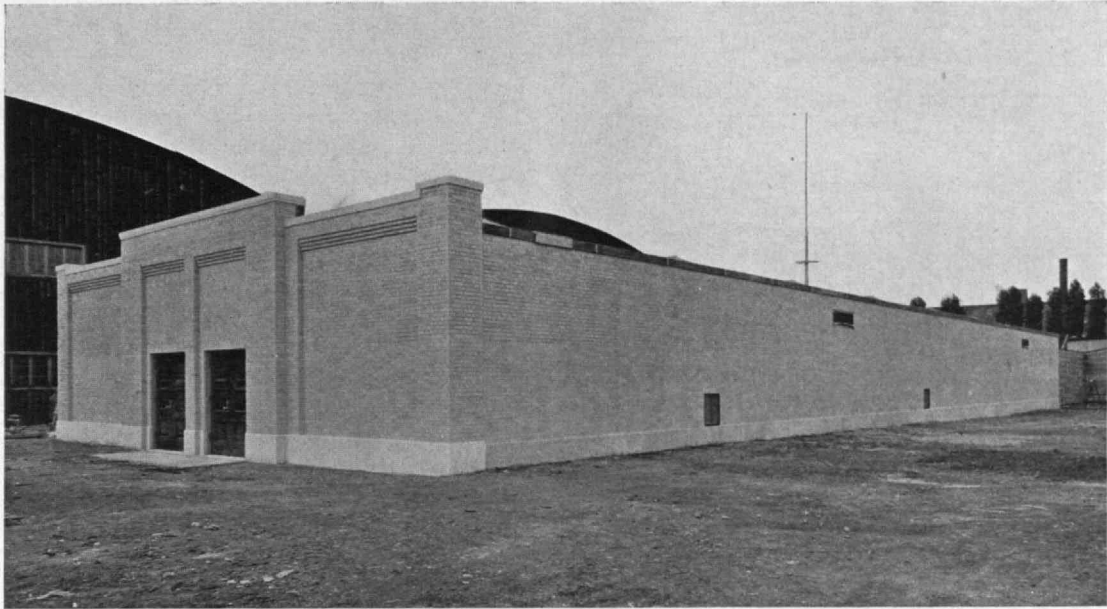
As human society develops, we may learn that what we call the formative years of youth are the most imaginative and the most creative years, if opportunity be given. And it may be, again, that the mass production of too many jobless young specialists must go on until institutions like ours have as "available student-material" young people whose individual trends and possibilities have been more effectively explored and differentiated in those schools from which they come to us.

Sincerely and respectfully yours,

JOHN C. SHERMAN, '95

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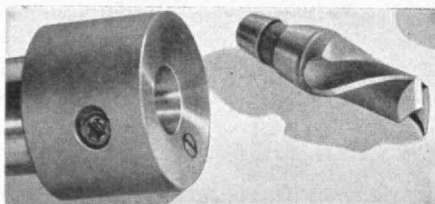


Let X = Real cost of cutters  
 A = Purchase price of cutters  
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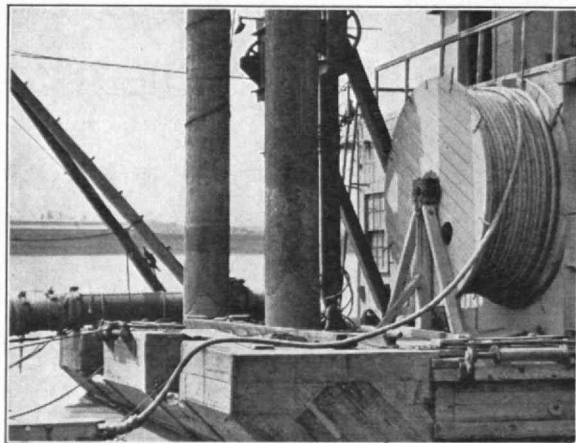
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## POOLING EFFORTS IN RESEARCH

(Continued from page 15)

between the problems of pure and applied science. There is apparently a feeling in some quarters that the study as a research problem of matters obviously of direct technical or industrial significance is less fruitful in its advancement of scientific knowledge than the direct attack on a problem of purely theoretical interest. One has but to review the history of the sciences to observe that this is not necessarily the case. On the other hand, it is evident that many problems approached only from the standpoint of curiosity, or with the attempt to explain some phenomenon of apparently no industrial significance have often led to far-reaching results in a material or practical way. A few examples may serve to illustrate these statements. It was purely a matter of curiosity that instigated the scientific study of twin crystals and their solutions that gave Pasteur the original idea of specific organisms of fermentation on the one hand, and led to study of racemic compounds on the other. It was the practical study of the abnormalities occurring in the fermentations of wine and beer that provided the opportunity to prove by long and carefully worked out experiment that *specific* types of organisms were responsible for the defects which were so rapidly bringing an industry to disaster. The result of this industrial research was the establishment of the germ theory of fermentation, which revolutionized the brewing and wine industries. Using a similar method of attack on a far more difficult problem, the disease of silk worms known as *flacherie*, Pasteur laid a sure foundation for the germ theory of disease and the magnificent developments from which came the sciences of bacteriology, and later of immunology and preventive medicine, the outstanding scientific triumphs of the 19th century. While begun with the titanic labors of one man — since he alone had acquired the necessary knowledge and experience — the outcome was a new and vast field of scientific endeavor in which today we find many men, in biology, physics and chemistry, working in fruitful coöperation.

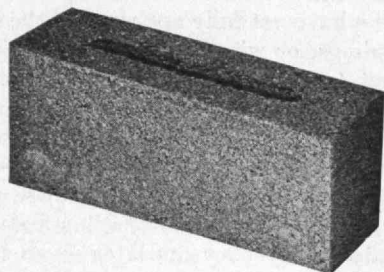
In the chemical field a research of purely industrial character with the object of securing the commercial utilization of gases obtained in the cracking of petroleum has led to outstanding results in pure science as well as in its applications in the arts and industries. Here new methods of research found their beginnings, and organic chemistry has been enriched thereby.

In Geology the interesting observations of Cushman that *foramenifera* were repeatedly present in certain sands on the sea bottom excited his curiosity and led him to make extended studies of these minute organisms and their relation to the geologic formations in which they occurred. Discovery of similar organisms in the drill cores brought to the surface while boring for oil was brought to his attention by fellow geologists connected with the oil interests. Exchange of information followed, and the ultimate results of this simple form of coöperative research led to the further discovery that here was a most important factor in the study of oil geology.

(Continued on page 38)

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## POOLING EFFORTS IN RESEARCH

*(Continued from page 36)*

The history of science presents many instances of isolated observations, of new facts, of actual discoveries by those who have not fully appreciated the significance of their findings, or who have postponed their further development to a more convenient season. Doubtless in many cases science or industry was not ready to recognize the value, or apply technically the results of these discoveries. The observations of Mendel on the factors of inheritance in plants were made previous to 1866, at which time he formulated his first law, but it was not until nearly 60 years later when Bateson revived and interpreted the phenomena, that students of the science of genetics recognized the real significance of the work of the industrious and thoughtful monk. Had a Bateson been immediately available to explain and collaborate, the development of our knowledge regarding heredity would have been greatly hastened.

In my own special field of interest, industrial microbiology, the greatest developments have come about as a result, not of the work of the isolated scientist, but as a result of coöperative effort between science and industry. This has made possible practically the whole range of our knowledge of successful food technology in canning, in quick freezing and refrigeration, in safe milk supplies, in the production of glycerin by fermentation, and to cite but one more from many possible items, in the production by fermentation of butyl alcohol with its train of commercial products, from solvents to the Duco that protects and adorns your motor car. Here are the results of many kinds of research, in theoretical and experimental science and in exact and minutely detailed engineering, from which as by-products have come distinct advances in the pure or theoretical aspects of the sciences concerned. It may not be out of place to remark at this point that in alliance with our own Division of Industrial Coöperation there are distinct opportunities to serve not only the industries which employ the men who are our most important output, but often to gain our other great objective, the advancement of scientific truth.

Finally the reaction of research, whether pure or applied, on our teaching effectiveness is worthy of brief consideration. One of the reactions of research on the investigator himself should be not only to place more knowledge at his disposal but to crystallize within his mind the whole field of his special subject and develop an orderliness and clarity of thought and mode of expression. If such a result is obtained, research should add greatly to effectiveness in teaching, and vitalize and freshen the method of instruction, since new sources of illustration will be constantly available. This is, I believe, particularly true in the case of industrial researches, where concrete instances of application of principles to specific reactions or processes may be used as a means of emphasizing fundamental or basic concepts.

If we can cultivate a determination to make teaching and research complementary to each other, and to be potent factors in our institutional service and standards,

we need not fear adverse comment from Alumni or Corporation, or lack of faith on the part of the public.

To express the idea in other words, the researcher who is also a teacher may well look upon his investigations as the expression of his creative faculties, and his teaching as the outlet for his interpretative ability. It were well to bear in mind what Glenn Frank has so crisply stated, "The investigator advances knowledge. The interpreter advances progress." In coöperative researches, especially where there is the constant contact and reaction of mind on mind, and where each participant is in a real sense part creator and part interpreter, the ultimate result ought to be, but perhaps not always is, of greater value than the product of the unaided worker in his cloistered cell.

Less tangible but not less important, especially to us who are units in a great educational institution, are what may be called the spiritual by-products of our joint interdepartmental undertakings. Coöperation should eliminate departmental or personal aggrandizement; should break down our scientific provincialism; should make possible spirited debate without acrimony; bring tolerance and respect for the opinions and ideas of others whose viewpoints and backgrounds differ from our own. Thus will come mutual understanding and the development of friendliness, and a greater catholicity in our attitude in all human relations.

If we can hold to the tenets, the spirit, and ideals expressed by our distinguished President on page 14, we shall go forward to real and enduring service in the promotion of useful knowledge, and the upbuilding of the Institute as the abode of scientific progress and truth.

## A MIGHTY MAN WAS HE

*(Continued from page 17)*

In a few months the report was all over town that I was at work on perpetual motion. Between the two evils I thought it best to choose the least and explained my object which was to develop a new motive power which no doubt would eventually supersede steam. But this notion did not take. There were more that believed in perpetual motion than in my 'magnetic power' and my credit would have stood higher if I had allowed the report to go that I was after perpetual motion."

He had mounted an iron bar on an axis so that it was free to revolve across the poles of his electromagnet. Then by breaking the current just as the iron bar was over the poles, momentum would carry them a quarter turn or more when the current was again switched on and the process repeated. This was the first motor and just as the first steam engines were operated by moving the valves by hand, this first crude motor was operated by a manual operation of a switch. He soon devised a commutator and, at some point in his experiments, put the wire on the rotating armature and bent the former armature into two half circles which he then made of steel, hardened and then magnetized. He thus had an electromagnetic rotor and permanent magnet fields but he specifically states in his patent issued in 1837 that these permanent magnets may be replaced by "galvanic magnets" which was one of his names for electromagnets.

Continuing from his manuscript, he says: "I persevered in my experiments and in July, 1834, succeeded in moving a wheel about 11 inches in diameter at the rate of 30 revolutions a minute but I found that the cost of using it on a large scale would be enormous. But I reasoned that there would be as much improvement in the expense of galvanism (*i.e.*, batteries) as there had been in the expense of steam power. I considered that I had opened a wide field for philosophical research and accomplished all that I had expected or promised." The above-mentioned motor had "four electromagnets, two of which were stationary and two on the revolving wheel. The north poles of the revolving magnets attracted the south poles of the stationary ones with sufficient force to move the wheel until both poles of both the stationary and revolving magnets became parallel. At this point the conducting wires from the battery changed their position by the motion of the shaft and the polarity of the stationary magnets was reversed, thus producing a constant revolution of the wheel." His patent model however reverses the current in the rotor. Other models were shunt wound.

The first public exhibition of Davenport's motor was in the courthouse at Troy, N. Y. This was a new motor with "an improved commutator." The exhibition was entirely successful and Davenport, after showing his model to Professor Henry and others, went to Washington to secure a patent, only to find that the cost of a model, specifications, and fees (*Concluded on page 40*)

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## A MIGHTY MAN WAS HE

(Concluded from page 39)

exceeded his ability to pay, and he was forced to return to Brandon. There, needing money for current expenses, he sold his motor to the Patroon, General Van Rensselaer of Albany, for \$30, probably the first sale of an electric motor. This motor was preserved in the Rensselaer Institute at Troy but unfortunately was destroyed in the fire of 1862.

Following this forced sale, only the faith and loyalty of his wife and the sacrifices of his brother gave Davenport courage to continue. He secured money to build another motor which was successfully exhibited at Troy, where it excited the interest and financial support of a Mr. Kimball of Springfield, Mass. With the \$50 so obtained, Davenport now built a model electric railway, running on a circular track, which was exhibited in Boston and Syracuse. Through these exhibitions he finally secured sufficient capital to enable him to secure his patent, which was issued on February 25, 1837.

Following the issuance of his patent Davenport's troubles were the same as those of many other inventors. A joint stock company was promoted and shares to the value of nearly \$10,000 were sold, but of this amount Davenport and his brother received less than \$600. About this time (1840) Davenport seems to have lived in New York City, where he built a motor large enough to drive a small printing press on which he printed the *Electro-Magnet and Mechanics Intelligencer*, a small sheet 12" x 14", in no way remarkable in itself but distinctive as being the first electrical paper in the world and in addition the first printing of any kind struck from a press driven by electricity. This was not a financial success but after a short interruption, Davenport tried again under the title *The Magnet*. This was even more short lived than the first, but altogether he attracted the interest of investors to the extent of about \$3,000, to be used for large-scale experiments.

His press notices would be considered highly satisfactory today. The *Saratoga Sentinel's* headline read: "Highly Important Invention of the Electro-Magnetic Engine"; the *New York Herald's*: "A Revolution in Philosophy — Dawn of a New Civilization"; the *New York Herald* said that the motor would raise a 200-pound weight at the rate of a foot a minute, and further "if we can turn one spindle for spinning cotton, 1,000 or 5,000 can be turned." And there were other notices in many other newspapers and also in Silliman's journal, the leading scientific magazine of the country. What

Davenport needed was the dynamo. In Europe, Pixii had built a direct current magneto generator in 1832 and by 1835 Saxton and Clarke had greatly improved it. The first steam driven (magneto) dynamo came about 1865 but if Davenport's motor had received enough publicity, who can tell how much these events might have been hastened? The industrial world has always been eager for any new sources of power. None of these things, however, happened, as the bank in which Davenport had deposited his money failed and with this last blow to his hopes, he returned to his blacksmith shop and seems to have made no further attempts to sell electric motors.

Jacobi, a Bavarian, the inventor of electro-plating, also invented an electric motor. As so often happens in the history of invention, two men in different parts of the world were experimenting along the same lines at the same time. Davenport's first success was in July, 1834. In November, 1834, Jacobi wrote that he first obtained rotary motion in May of the same year. If the rotary motion which Jacobi obtained in May was produced by the same apparatus that he described in November, his technical priority must be conceded, but it does not appear to be certain that such is the case. In any event it is remarkable that one who labored under such limitations and disadvantages as Davenport, should by the unaided force of his native genius, have achieved such a result.

There is a biography of Davenport written by a descendant, W. R. Davenport, of the Vermont Historical Association, and an excellent series of articles by Franklin Pope in the *Electrical Engineer* beginning January 7, 1891 (Vol. XI, pp. 1, 33, 66, 93, 125). Here will be found much of interest that could not be included here. Mr. Pope's last paragraph is: "If the publication of these papers shall in any measure serve to render tardy justice to the memory of one of the most amiable and deserving of men, then the story of the Brandon blacksmith, the writing of which has been to me a labor of love, will not have been in vain."

## SCIENCE AT ROUND HILL

(Continued from page 26)

colleague, W. H. Radford, '32, and the essential aid of an accommodating fog which rolled in from Buzzard's Bay on the late afternoon of July 20. The success of the results led to such far-flung publicity that there is no need to say more here.

In the fall of 1929, Mr. Ellis A. Johnson, '28, was taken on the staff to undertake the investigation of the possibilities of sound energy transmission through fog. An early consideration of the problem led to an appreciation of the fact that there was no really adequate primary measuring device. This (Concluded on page 42)

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## SCIENCE AT ROUND HILL

(Concluded from page 40)

promised to be particularly troublesome in the case of supersonic transmission in which we were keenly interested. Professor Richard D. Fay, '17, of the Communications group suggested that if it could be realized, a thermocouple would be most suitable. Johnson found by a neat analysis that the idea was feasible, provided thin film thermocouples could be sputtered.

We were fortunate to find that Professor Louis Harris, '20, of the Chemistry Department was interested in thin thermocouples for other reasons. Johnson and Harris carried on a thoroughgoing investigation of sputtering which led not only to the realization of the delicate thermocouples required by Johnson but also to interesting observations on the disintegration of sputtered deposits and on an anomalous thermoelectric effect in thin bismuth films.

The delicate couples developed by Johnson comprise thin sputtered metal strips of dissimilar metals, bismuth and antimony, for example, of the order of 10-5 cm. thickness on cellulose acetate films of the same order of thickness — all mounted on a thin mica frame. Couples of this type have been tested up to sound frequencies of 5,000 cycles per second. The results indicate that couples can now be made to respond to sound waves of frequencies as high as 300,000 cycles per second. The thinness of the thermocouple instrument makes it an excellent device for exploring supersonic fields, heretofore a difficult if not well-nigh impossible task.

Space is too limited to point out in any detail many other aspects of this work. The amplifier associated with these delicate couples was in itself a problem. Its investigation led to a further interesting and extremely important research to determine the sources of the "noise" in such devices. Johnson has been ably supported in this work by Carl Neitzert, '32, who joined the staff in December, 1932. Amplifier noise arises in the tubes and in the external input circuit. It is felt that a knowledge of the individual causes of the internal tube noise will lead to the realization of amplifiers capable of responding to voltages much smaller than is possible today. Such an improvement would open up a new field of application of amplifier technique.

Together with these projects of the Department of Electrical Engineering at Round Hill, there is the high-voltage generator and nuclear research program of the Department of Physics carried on by Dr. Robert J. Van de Graaff and his colleagues, L. C. and C. M. Van Atta. The dock at Round Hill originally utilized to harbor the dirigible *Mayflower* proved to be the only suitable housing for the generator. This building, therefore, has since been developed into a high-voltage and nuclear research laboratory which promises to be a leading center in this field.

Needless to say, the various pieces of work at Round Hill owe whatever success may be theirs to the assistance of many. Members of the Institute staff in Cambridge have been freely consulted and have given liberally. Above all, however, to Colonel Green goes the credit for having made the project a substantial reality.

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¶ *Because:* You have brought to the field of physical investigation a productive eminence, marked by breadth of knowledge, ingenuity in experimentation, and lucidity of exposition.

*Because:* Your research in pure science reflects a rare union of precision and originality of mind, and your research in applied science reveals the imaginative power of inventive genius.

*Because:* Your brave innocence of belief that a man can concurrently serve at the altar of productive scholarship and carry the distracting obligations of the administrator has, in your case, been justified.

*Because:* You have declined to pursue your researches on the sidelines of the social turmoil or sound-proof your laboratory from the cries of the street, but have manifested a living sense of the social implications of all science, erasing in your person the frontier between the physical sciences and the social sciences in unique awareness that physics is quite as social as sociology.

*Because:* Despite the draft that public service is making upon your energies, you compel us to speak of your research in the present tense.

*Because:* At the behest of the President of the United States, your disciplined judgment has been brought to bear freely and fruitfully upon the crucial problem of the relation of science to government.

I am happy to confer upon you, in the name of the University of Wisconsin, its honorary degree of Doctor of Laws.

*William Hovgaard*

¶ Graduate of the Naval Academy of Copenhagen and of the Royal Naval College at Greenwich, England, one-time Commander in the Royal Danish Navy; for 33 years Professor of Naval Design and Construction in the M.I.T.; expert consultant and adviser of our own navy

in peace and in war on questions highly technical and seriously practical both as to ships of the air and ships of the sea; historian of the modern warship and author of technical essays and memoranda of amazing variety, range, and scholarly significance; a man of highly specialized knowledge and yet a leading critic of the misuse of that knowledge for the militarization of society or the assertion of brutal power; an advocate of international peace and of reasonable but steadily extending disarmament; a scientist, an engineer, an historian of war faithful to the ideals of peace. We propose him, *honoris causa*, for the degree of Doctor of Engineering. (Stevens Institute)

*Frederick George Keyes*

¶ (By Professor Phelps): Physical chemist. Born in Kingston, Canada, he took his Bachelor of Science degree at Rhode Island College, and his master's and doctor's degrees at Brown University. He is Professor of Physical Chemistry Research at the M.I.T., chairman of the Department of Chemistry, and director of the George Eastman Research Laboratory. He is today the most prominent American investigator in the field of thermodynamics. His particular contribution is the interpretation of the thermodynamic properties of gases and liquids from the point of view of intramolecular forces and the introduction of specific and characteristic magnitudes in the physico-chemical applications of the theory of Josiah Willard Gibbs.

He has developed new methods for measuring the physical properties of fluids; as a practical result of his work, enormous savings of fuel in improved steam-turbines have been made; while similar benefits to refrigeration practice have come from his work in ammonia. It is clear, therefore, that he is not a Laodicean.

His mastery of the methods of theoretical analysis is equaled by his skill in devising and carrying out experimental procedures of the highest precision.

(By President Angell): Nature has joined in you fruitful and unusual powers of theoretical analysis to high fertility in ingenious practical experimentation, the union issuing in a plethora of discoveries invaluable to

man. In recognition of your honorable achievement and because she sees in you a worthy descendant in the direct scientific line from her own great Willard Gibbs she confers upon you the degree of Doctor of Science, admitting you to all its rights and privileges. (Yale)

## Congratulations

¶ To HERBERT J. BALL '06, on being elected to the executive committee of the American Society for Testing Materials. The late WILLIAM H. BASSETT '91 was elected President shortly before his death on July 21.

¶ To PORTER H. ADAMS '14, on becoming President of Norwich University (Vt.). One of the organizers of the National Aeronautic Association in 1922, he served as chairman of the Executive Committee until 1926, when he became President. In 1933 he was elected to the Vermont legislature, and in the same year became Vice-President of Norwich University.

¶ To KENNETH T. BAINBRIDGE '25, on receiving the Levy Medal of the Franklin Institute.

¶ To MAURICE KLEINMANN '33, on receiving the 27th annual Paris Prize of the Beaux Arts Institute of Design which carries with it a scholarship of \$3,600 for study in Paris.

## In the News

¶ JOSEPH C. BOYCE, staff, for his résumé of recent determinations of nebular spectrum lines with Professor Donald Menzel and Dr. Cecilia Gaposchkin. The paper offers increasing evidence that the theory of the homogeneity of the universe must be discarded.

¶ RICHARD E. SCHMIDT '87, on becoming Chicago's building commissioner.

¶ ALBERT GEIGER '95, for his contributions to traffic safety. Boston was the first city in which the white safety line for traffic was painted and Lt. Geiger suggested the use of it during the Boston police strike in 1919. He also devised the white belts and flood lights on traffic regulators.

¶ HARRY N. ATWOOD '05, for designing an "air flivver," to sell for less than \$1,000 and constructed for use by the average automobile driver.

¶ THEODORE B. PARKER '11, on his appointment as State Engineer for PWA projects in Massachusetts.

¶ WILLIAM W. DRUMMEY '16, for inventing a new type of fire escape, made of steel, glass and brick.

### Written

¶ By GELETT BURGESS '87, a mystery story, "Two O'Clock Courage."

¶ By ALFRED P. SLOAN '95, an article in the September *Atlantic* entitled "The Forward View."

¶ By ROBERT S. ALLYN '98, a booklet on "The First Plant Patents," a valuable guide for plant breeders.

¶ By THOMAS E. TALLMADGE '98, a book entitled "The Story of England's Architecture." Mr. Tallmadge was the architect for the American Colonial Village at the Fair.

¶ By RICHARD C. TOLMAN '03, a book on "Relativity, Thermodynamics and Cosmology."

¶ By ANDREW D. MACLACHLAN '21, and H. C. Klein, an article in *Chemical and Metallurgical Engineering* for July on "Rubber Acid Hose for Process Industry Service."

¶ By FRANK MASSA '27, a book on "Applied Acoustics;" (Blakiston).

### Spoke

¶ DUGALD C. JACKSON, staff, on "Steinmetz, as the World Knew Him" at the 50th Anniversary Dinner dedicated to the memory of Dr. Charles P. Steinmetz. Dr. WILLIS R. WHITNEY '90 spoke on "Steinmetz and the Laboratory."

¶ F. ALEXANDER MAGOUN '18, at the Tenth Annual Industrial Conference of Connecticut, in June, on "Maintaining Industrial Harmony."

¶ ARTHUR C. RUGE '33, a paper at the Ninth Annual Meeting of the Eastern Section, Seismological Society of America, in April, on practical model methods for the determination of earthquake stresses in framed structures.

## DEATHS

\*See class notes for account.

¶ WILLIAM H. WALKER, on July 9. Distinguished pioneer in chemical engineering education, his philosophy that engineering is the art of applying the fundamental sciences to the solution of practical problems was the basis of his teaching. He was a former Head of the Department of Chemical Engineering (1912-1920), founder and director of the Research Laboratory of Applied Chemistry

(1907), and first director of the Division of Industrial Coöperation, organized in 1920. He was a director of and consulting engineer for the Dewey and Almy Chemical Company. In 1900 he joined in partnership with Dr. ARTHUR D. LITTLE '85, well-known industrial chemist, returning to M.I.T. in 1902 to establish a course in the application of engineering to the needs of industry.

¶ EDMUND KNIGHT '74, on March 21.

¶ CHARLES A. SAWYER\* '76, on July 8.

¶ SAMUEL RINDGE '81, on July 8.

¶ ROBERT HARDON\* '83, on June 1.

¶ NAHUM WARD\* '84, on June 13.

¶ HARRY P. BARR '85, in April.

¶ ROBERT L. BOWLES '87, on July 16.

¶ GEORGE MUNN '88, on August 13.

¶ PATRICK LYNCH '93, on August 6.

¶ ODIN ROBERTS '88, on July 22.

¶ GEORGE R. ALLEY\* '89, on July 20.

¶ JOHN W. CABOT '89, on Feb. 17.

¶ GEORGE FULLER\* '90, on June 15.

¶ A. FORREST SHATTUCK '91, on April 11.

¶ WILLIAM BASSETT\* '91, on July 21.

¶ WARNER J. STEEL\* '91, on May 22.

¶ JOHN C. ABBOT '93, on June 14.

¶ JOSEPH W. PHELAN\* '94, on June 24.

¶ JAMES R. WELLS '95, on Jan. 17.

¶ HAVEN HILLIARD\* '96, on July 15.

¶ FRANK N. HORTON '99, on July 19.

¶ LUCY M. ALLEN '00, in April.

¶ EBEN CHAPMAN '01, on March 20.

¶ WILLIAM WILLISTON '02, on June 7.

¶ RAYMOND M. HOOD\* '03, on August 14. "Twelve years ago Hood was a clientless architect in Manhattan, married and \$10,000 in debt. News came that a design he had drawn for the \$7,000,000 Chicago *Tribune* Tower had won [with John Howells '90] its \$50,000 competition prize. Soon he had all the commissions he wanted. A strident exponent of functionalism, a reckless experimenter, he gave his black American Radiator Building (Manhattan) a gold-flecked top to suggest burning coal, proudly pointed out that windows which usually look like ugly black holes, become invisible in a black building. By putting orange shades on the windows of the *Daily News* Building, he used them as a part of a vertical motif of alternating white and red-dish stripes. His blue-green McGraw-Hill Building was almost all window. With Harvey Wiley Corbett and Benjamin Wistar Morris he was an architect for Rockefeller Center. He rejoiced that the average life of a Manhattan skyscraper is only 20 years because it gave architects a chance to experiment." (*Time*)

"... Even if you look down the list through the ages Raymond Hood

will stand out among the architects of all time as one who had the fortune and the genius to conduct radical experimentation with mass and color. Many have had this privilege on canvas or with clay, but it is rare for a man to be allowed to play around with steel and glass and stone in this fashion. . . .

"His buildings did not cumber the earth. Take, for instance, the *Daily News* Building and the *Tribune* Tower in Chicago. In both instances the passerby gets the effect that the structure is poised upon one toe and eager to float and fly. . . . Hood could do you a skyscraper which was ready for a fight or frolic. . . . I see no reason why he should not be one of the happiest inhabitants of heaven. There's so much work to be done. He will look at the streets of gold and the many mansions of jade and jasper and then if Hood carries with him something of his mortality, he'll say, 'Not that, let's have steel and glass.' And if he is still the man he was, which I most fervently believe, already the riveting machines have begun their fanfare within the pearly gates." (Heywood Broun)

"In the death of Raymond Hood, America has lost one of its ablest architects, and at a time when he was giving us his most important work. His career was dramatic. Beginning as a traditionalist, he ended as a belligerent 'functionalist,' and each of his buildings in turn became a center of architectural controversy. . . . But Hood always combined his openness to new ideas with a sure esthetic sense that protected even his most daring designs from the charge of freakishness. His monuments are all about us, and each one of them arrests the eye." (N. Y. *Times*.)

¶ ROBERT LORD '05, on July 29.

¶ CHARLES PRICHARD '05, on June 25.

¶ HERMAN HENRICI\* '06, on May 30.

¶ HOWARD C. BLAKE '06, on July 10.

¶ NORMAN FREDRIKSEN '12, in June.

¶ HOWARD WELLS\* '15, on June 24.

¶ JOHN H. TIPTON '18, on April 16.

¶ J. BERTON ALLEN '20, on Feb. 4.

¶ REGINALD G. BURR '20, on June 2.

¶ JACOB BALYOZIAN '21, on August 24.

¶ WALTER MURDOCH '23, on July 29.

¶ WILLIAM B. BADER '25, on June 9.

¶ MARGARET BIRGE '27, on April 9.

¶ CHANDLER BURCKES\* '28, on June 18.

¶ BENJAMIN CALVERT '31, on April 20.

¶ T. ROSBOROUGH '32, on Feb. 10.

¶ K. M. PIPER\* '33, on July 30.



# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### *Technology Club of Norway*

The Technology Club at Oslo held a meeting on July 26 at which the spirits ran high, as usual. One of the extra-curricular activities of the club is a special division for shooting, for which purpose the club has rented a big area so that members might go shooting together in the autumn. It is a fine sport and the source of considerable enjoyment for members of the club. This has been going on for the last three or four years in addition to the regular gathering of Norwegian alumni. Professor Porter, of the Department of Business Administration, visited the club this past summer while he was over there. Other such visitors are, of course, cordially welcomed. — CLAUS M. THELLEFSEN '22, *Secretary*, V. Abbediengen pr. Skogen, Oslo, Norway.

### *Technology Association of Japan*

The tenth annual meeting of the club was held in the club room at Shanshin Building, Tokyo, in the spring. As usual, Secretary Kametani made a report on the 11 meetings of the past season; the Treasurer's report was read and accepted, and the following officers were elected for the coming year: President, Takanaga Mitsui '18; Vice-Presidents — W. W. Stevens '98 and Kaneko Goto '11; Secretaries — Masaru Kametani '25 and Yoshio Kubota '23; Treasurer, Masaru Kametani; members-at-large — Isaguro Wada, Kaseshi Bitoh '23, and Yutaka Tanaka.

Showing of the Technology movie is planned during the coming year. Interest is high among the alumni over athletics. The Harvard baseball team was in Tokyo in August playing college teams; the All-American track team in September; and then the National League picked baseball team is due there in October. — MASARU KAMETANI '25, *Secretary*, Mitsui Gomei Kaisha, 1 Surugacho Nihombashi, Tokyo, Japan.

### *London Meeting*

The following account of a meeting of alumni in London is based on a letter from Rigby Wason '94.

On June 22 the M.I.T. men living near London entertained a party of Technology students at the Waldorf Hotel. Wason presided at the meeting and was able to secure the signatures of all of the men present. The Technology movie was shown after the dinner, and was much appreciated. Wason gives the credit to David Graham for having made all the arrangements for the meeting, acting throughout in the most efficient manner as a sort of unofficial secretary. Of the

men listed as present, Wason and Graham are thought to be the only two British subjects, the others being residents around London. Jack Bent was present with his father. The list totals 28, made up of 21 members of the touring party, six alumni, and one son of an alumnus. The alumni and son group included: Frank S. Badger '93, Rigby Wason '94, Walter Bent '05, his son, Jack Bent, Winthrop P. Haynes '11, David Graham '29, and Bernard S. Gould '32.

The touring party, made up largely of Technology men, but with some members from other institutions, is as follows: William G. Ball, Jr., XV '34, Thomas M. Burton, XV '34, John G. Callan, Jr., XV '34, William G. Cragin, XV '35, Buckley Crist, XV '35, William Leslie Doten, Jr., XV '34, Arthur C. Esslinger, XV '34, Glen R. Fugal, XV-G '34, Edwin S. Hammonds, XV-G '34, Morten C. Hansen, XV '34, William D. Harper, Jr., II-G '34, Alleyne C. Howell, Jr. (Yale), Chester G. Martin, Jr. (Lowell Institute), Robert W. McKibben (Antioch), John O. McLean, V '34, Ralph R. McNay (M.I.T. Library), Gordon C. Pearson, XV '33, Jackson H. Taft, XV '33, James W. Vicary, XV '33, and Philip B. Walker, Jr., IV-A '34.

### *Montana Society of the M.I.T.*

Nine members and guests of the Montana club met at dinner at the Finlen hotel July 12 to honor Professor Carle R. Hayward '04, of the Mining Department at the Institute, and L. W. Johnston '31, also of the staff. Professor Hayward outlined in brief a history of the Institute and its staff of professors. It was interesting to the mining fraternity of Butte to know that Dr. Lindgren, who has acted as expert geologist in a number of mining litigations in Butte, has retired and has been succeeded by Dr. Mead of the University of Wisconsin. Hayward also gave us details of a new plan that is being tried to give engineers a better training in economics and administration.

Dr. Francis A. Thomson, Head of the Montana School of Mines, explained the coöperative spirit which always has existed between the Montana institution and Technology. Through the courtesy of Dr. Thomson and Dr. Curtis L. Wilson, the guests were shown through all departments of the local school earlier in the day. They visited the smelter at Anaconda on Wednesday.

Carl J. Trauerman '07 gave a description of Dr. Compton's talk before the Northern California M.I.T. Association, which he attended in San Francisco a few weeks previously.

Professor and Mrs. Hayward with their son and Mr. Johnston left the following morning for Great Falls, thence to Glacier Park and to the West Coast by auto.

Those in attendance were T. J. Murphy '28 and W. L. Creden '90 of the State Highway Department; George H. Holmes '24, Butte engineer, William A. Kemper '04, of the Butte Land and Investment Company and honorary Secretary of the Montana club, Carl J. Trauerman of the Montana Stock and Bond Company, G. Barker Hulett '34 of the Basin Montana Tunnel Company, August Grunert, Butte mining engineer, Fred Melcher of the Western Iron Works, and Dr. Thomson. — CARL J. TRAUERMAN '07, *Secretary*, 25 East Broadway, Butte, Mont.

### *Technology Club of Central Pennsylvania*

The club held a successful meeting on May 29 at the University Club in Harrisburg. There were 18 alumni present, of which a large proportion had driven over from New York and Lancaster. In view of the long service of our present officers, it was deemed advisable, in line with the times, to have a "New Deal." Accordingly, Louis S. Morse '96, running on a Progressive ticket, was elected President of the club. There was a general feeling among those present that as a curb to the progressive spirit of our new administration an officer from the "Old Deal" should be carried over, which office fell to the lot of the Secretary — to bridge the gap between old and new.

The principal feature of the meeting was the showing of the new Technology movie. This cinematographic adventure proved to be very interesting and instructive. Several prospective students from the Harrisburg Academy and the local high schools were present as our guests and were, we believe, very favorably impressed with the Institute as portrayed in the film. We passed from the sublime to the ridiculous with a Mickey Mouse comedy, and closed the evening with a film showing the development of the much discussed Airflow Chrysler. The meeting was voted a success by those present and our new President was urged to make our get-togethers more frequent than in the past. — M. W. DAVIDSON '26, *Secretary*, Bell Telephone Company, 210 Pine Street, Harrisburg, Pa.

### *M.I.T. Club of Northern California*

We were particularly fortunate in having President Compton as our guest at a special luncheon in his honor at the Engineer's Club in San Francisco on Friday, June 22. A private dining room at the club was reserved for this meeting. After greeting President Compton informally before lunch, the attending alumni, about 40 in number, enjoyed a delicious luncheon served by the club. President Compton's talk following was



of great interest to all of us. This was our first opportunity as a club to greet President Compton since his memorable visit to this vicinity in 1931. It was a great pleasure to renew our acquaintance with him again.

On June 23 our Vice-President took unto himself, for better or worse, a wife. On that day Ursula Josephine Murphy was wedded to Franklin W. McLaren '25, VI-A, at St. Mary's Cathedral in San Francisco at high noon. D. D. Donald '25, VI-A, attended the bridegroom as best man. The club joins me in wishing Frank all kinds of happiness.

Regular weekly luncheons of the club are held on Tuesdays at the Engineers' Club, 206 Sansome Street, San Francisco. Local and visiting alumni are cordially invited. — D. D. DONALD '25, *Secretary*, 140 New Montgomery Street, San Francisco, Calif.

### *M.I.T. Club of Western Pennsylvania*

The final meeting of the year was held at the home of Millard M. Greer '24 in Roslyn Farms. It was an outdoor meeting, featured by a keg of Pilsener beer and a cold supper.

Our Treasurer, Malcolm G. Davis '25, presented his annual report showing an operating profit for the year after three years of deficits. The chairman of the Nominating Committee, Francis C. Foote '15, presented the following list of nominees for the club officers during the coming year, all of whom were unanimously elected: President, John T. Nichols '22; Vice-President, Malcolm G. Davis '25; Secretary, Samuel J. Helfman '24; Assistant Secretary for Membership, Charles M. Boardman '25; Assistant Secretary for Publicity, E. J. Casselman '15; Treasurer, Millard M. Greer '26; Alumni Council Representative, Luther K. Yoder '95; Members of the Executive Committee, H. C. Greer '99; E. A. Soars '21; F. L. Bishop '98. — The retiring President, Howard W. Dexter, Jr., '23, and the new President were both called upon for very brief speeches.

The remainder of the evening was given over to social activities. Thanks to the hospitality of Marc Greer and the zeal of our arrangement chairman, E. L. Chappelle '25, we enjoyed a splendid evening. There were 24 members in attendance.

At the opening of another season of activities we wish to remind all M.I.T. men who may be in Pittsburgh that we meet for luncheon every Friday in the year at 12:30 at the Union Grill, Diamond Street near Grant Street, Pittsburgh. — E. J. CASSELMAN '15, *Assistant Secretary*, Mellon Institute, Pittsburgh, Pa.

### *Technology Club of Shanghai*

The April meeting of the club, held on April 26 at seven p.m. at the Bankers' Club, 4 Hongkong Road, was attended by 28 members. The hosts of this dinner were: Messrs. S. Y. Hung, C. P. Hsueh, K. Shih, and T. S. Sih.

After dinner the meeting was called to order by the Chairman, K. T. Lee. The Secretary was then called upon to read the minutes of the last two meetings and letters from Professor Locke and President Compton. The minutes were passed as read. W. Y. Chiu was appointed to furnish a list of engineering colleges in China for the Secretary to use in distributing the bulletin, "Educational Opportunities at M.I.T."

Upon the suggestion of the Chairman, it was unanimously passed to publish a new directory to include photographs of the individual members and the following five members were duly elected to serve on the Directory Committee with T. K. Kao as Chairman: A. E. Golding, H. K. Chow, T. S. Seetoo, L. C. King.

T. Hsiao '26, a new member, was then called upon to give a brief account of himself and many questions were asked of him, some of which Mr. Hsiao found too private to answer. S. Y. Hung, one of the hosts, absent from the Tech meetings for the last two years, was asked to make due explanations.

The next item was a speech by one Mr. Cox, editor of the local newspaper, *The New World*. Mr. Cox talked on the subject of "Sino-American Friendship," but his talk, as our Chairman expressed it, was only long enough to cover the subject.

The last event was a surprise furnished by the Chairman. This was in the nature of prizes as follows: Prize No. 1, one cut glass plate; No. 2, one large tin of "Insectox"; No. 3, one small tin of "Insectox"; No. 4, one bottle of "Insectox"; No. 5, one piece each "Ve Sun," disinfectant soap and peony soap. Besides the four lucky ones, the rest of the crowd all got the fifth prize. As the prizes are all products of the China Chemical Works, Ltd., of which our Chairman is the manager, they were doubly appreciated by the gathering. As the meeting was drawing to a close, Mr. Golding suggested that for the May meeting, we should arrange for an excursion trip to Hangchow. The suggestion was approved by the gathering and the Executive Committee was duly authorized to make necessary arrangements. The meeting was adjourned at 10 p.m.

The May meeting of the club was held at the fashionable Husi Club on Hungjao Road on May 31. There were 29 members present. The well-arranged Husi Clubhouse and its spacious lawn and garden afforded the members a good opportunity to refresh themselves after a day's hard work and everybody present enjoyed thoroughly the new country environment.

At eight p.m. dinner was served, and among those present were our honored guest, Dr. Chatley, and Mr. Happy Adams, who has been absent from recent meetings. The turkey dinner was beyond reproach.

After dinner, the Secretary read the minutes of the last meeting and also a letter from the Hangchow Municipality requesting us to recommend a Tech man to serve as civil engineer in the City

Government. The Directory Committee was then asked to make a report of their work, but Mr. Kao informed the gathering that the committee had not yet had a chance to meet together but promised to hurry up the work as quickly as possible. The place of the next meeting was then decided to be the Chiaotung University with our members teaching there to serve as hosts.

Dr. Chatley of the Whangpoo Conservancy Board was then asked to speak on the subject of Technocracy. Dr. Chatley developed the subject extensively and his speech proved to be highly interesting as well as instructive. After a vote of thanks was given to our host of the evening, Mr. Hopkins, the meeting was adjourned at 10:15 p.m.

The June meeting of the club was held in the Yung Hung Hall, Chiaotung University, on June 25. Y. T. Van, Sydney Y. Chen, W. Y. Chiu, M. Chow, M. T. Hsu, Y. M. Ma, K. T. Tu, and C. H. Shih acted as the hosts for the occasion. In spite of the record-breaking hot spell, members began to pour in about five p.m. After cooling themselves with cold drinks and refreshments, members scattered for their point of interest. Some went to enjoy tennis on the clay court, others preferred swimming in the pool, while still others made a visit to the laboratories of the different engineering departments.

After dark, 29 members were present at four tables to enjoy the Chinese feast. President K. T. Lee called the meeting to order. The minutes of the May meeting were read and accepted. Letters from the Alumni Secretary in Boston, Professor Locke, referring to identification of names and addresses of certain members, and from Mr. Ing, manager of the Chinese Students' Club at M.I.T., appealing for contributions of Chinese engineering periodicals for the Chinese shelf at the M.I.T. Central Library were duly read. In response to Mr. Ing's call, Waken Chang promised to contribute the *Journal of Electrical Engineering* while others suggested that the Secretary write to the different engineering organizations for further contributions.

Ginntung Seetoo made a report on behalf of the Directory Committee. He told the meeting that arrangements will be made with the Wei Fong Studio for our members to have individual photos taken at a special price. Each one will be charged with the flat rate of a dollar, partly for the photo and partly to cover the printing expenses of the Directory. Any deficit shall be met by the proceeds from advertisements.

As there was no other business, President Lee called on H. R. Greatwood to deliver his talk on oil refining. Mr. Greatwood supplemented his talk with two reels of film on the screen. It certainly was an interesting address. A vote of thanks was heartily accorded to the hosts and the speaker of the evening. The meeting was adjourned at 11:30 p.m. — Z. Z. Li '22, *Secretary*, Tonying Silk Trading Company, Ltd., 15 Museum Road, Shanghai, China. T. C. WANG, *Assistant Secretary*.

### Berkshire Technology Club

On May 17 the new three-reel film about the Institute and the activities of the engineering profession was shown to a large group of senior students in the Pittsfield High School. The same evening the films were shown to a hastily summoned group of 15 Technology men in the Board Room of the Pittsfield-Third National Bank and Trust Company.

There has not been a meeting of the Technology group of Berkshire County in approximately ten years. J. McArthur Vance '91 was the last elected President and John M. DeBell '17 was the Secretary. About two years ago John DeBell left the employ of the General Electric Company, Pittsfield Works, to accept a position with the Hercules Powder Company of Wilmington, Del., and latest reports show that he has been sent abroad on business for about a year. After the showing of the film, therefore, President Vance appointed a committee, consisting of Earl Ferry '12, A. W. Hough '19, and Joseph M. Naughton '24, to arrange for a meeting and bring in a slate of nominations.

It was discovered that there are 81 Technology men in Berkshire County, and 46 of them appeared at a dinner meeting which was held at the South Street Inn in Pittsfield on Tuesday evening, June 12. Professor C. E. Locke, Alumni Secretary, and Professor E. R. Timbie drove up from Boston that afternoon to attend the dinner and make interesting speeches. Professor Locke gave a very informative description of the activities of the Alumni Association and showed how all Technology former students and graduates, as well as the local groups, fit into the affairs of the national Association. He was followed by Professor Timbie, who described the educational policies and the financial affairs of the Institute. Numerous questions followed both of these talks.

Nominations were then made and the following officers were elected: Daniel M. Wheeler was elected Honorary President. He is a member of the Class of 1868, the first class to be graduated from the Institute, of which the only other surviving member is Professor Richards. Earl Ferry was elected President, and Joseph M. Naughton, Secretary-Treasurer. Professor Locke then exhibited the high-speed Edgerton pictures, which were taken by the stroboscopic camera developed at the Institute. Singing of the Stein song concluded this first meeting in over ten years.

It is hoped to hold frequent meetings and maintain an active interest in Institute affairs. There was also some discussion of the ways and means of interesting local high school students in the Institute. Professor Timbie asked those in attendance to contradict the prevailing impression that "the course at Technology is too difficult for the average student" which, in his opinion, has discouraged promising students from attempting to enter Technology. — JOSEPH M. NAUGHTON '24, Secretary, Pittsfield-Third National Bank, Pittsfield, Mass.

### Technology Club of Puget Sound

The Technology movie was the main reason for the men of the Puget Sound region meeting for dinner at the Seattle Yacht Club on the evening of May 28, 1934. After dinner the movie was thrown on the screen and the club acclaimed it the peer of any Hollywood has produced plus educational value. Maurice P. Anderson '10 was the operator and also was responsible for a two-feature show. Following the movie, he showed several reels of pictures he took on a trip to Central America for one of the European steamship companies that has ships running to the West Coast.

The men present were: C. H. Alden '90, T. M. Rowlands '26, W. S. Matheson '99, F. A. Naramore '07, H. G. Schwarz '33, R. L. Dyer '06, M. P. Anderson '10, J. Daniels '05, R. G. Tyler '10, C. E. Lasher '06, G. J. Ackerman '28, R. J. Chapin '26, P. Treutlein '24, C. H. Pierce '19, J. L. McAllen '11, F. S. Eastman '29, J. W. Pratt '23. — FLOYD A. NARAMORE '07, Secretary, Central Building, Seattle, Wash.

## CLASS NOTES

### 1875

The Class held its 52nd consecutive annual meeting on May 22 at the Engineers Club, Boston, where members of '75 sat down to an appetizing lunch at one p.m. Of the ten known living members, four were present: Atkinson, Dorr, Eddy, and Hibbard.

After lunch the usual formalities were observed. Letters of regret and greeting from Lyman, of Northampton, and Bush, of Orlando, Fla., were read. Hibbard was elected to the office of Secretary-Treasurer to succeed our late beloved Joseph W. Homer, who had held the office the past three years. A committee was appointed to draw up resolutions on the death of Homer for the records and for his family. It was decided to hold future meetings in the early summer owing to the probability of better weather than if held in mid-winter as has been our custom heretofore. The meeting broke up about four p.m. — THOMAS HIBBARD, Secretary, 4 Ridge Road, Milton, Mass.

### 1876

Charles A. Sawyer was born in Boston in 1855 and died at Chatham, Mass., on July 8, 1934. He was graduated in the Class of '76 in Course IX. He later studied law and was admitted to the Illinois bar, but did not practice law to any great extent.

Much of his life was spent in Illinois and was devoted to real estate in Chicago, where the most of his father's business interests were, which were largely inherited by Sawyer.

He returned East about 1910 and was well known in the real estate field here. For the past few years he has lived in Chatham, Mass. — CHARLES T. MAIN, Secretary, 201 Devonshire Street, Boston, Mass.

### 1877

The Class met at the Exchange Club for their 57th annual meeting. There were present, in the order they sat around the table: President Charles A. Clarke, George W. Kittredge, Joseph P. Gray, William H. Beeching, Edward W. Davis, Byron E. Higgins, Frank I. Sherman, Colonel George F. Quinby, B. C. Mudge, A. L. Plimpton, George Bartol, Henry D. Hibbard, and B. T. Williston. Before lunch was served, the photographer of the Boston *Transcript* made two exposures of the class at one end of the table, and after this B. T. Williston made exposures of the class on one roll of film. A splendid lunch was served. Letters and photos of absent members of the class were passed around. These, with anecdotes of old times, enlivened the meeting until the time for closing. All joined in saying it was one of the most enjoyable reunions ever experienced. C. A. Clarke was elected President and B. T. Williston, Secretary-Treasurer for the coming year. There are now 34 living members, 6 unaccounted for, and 98 deceased. — B. T. WILLISTON, Secretary, 3 Monmouth Street, Somerville, Mass.

### 1882

The Fifty-Second Annual Reunion of the Class of '82 was held this year on June 13, at Baldpate Inn, Georgetown, Mass. Members and guests gathered at noon on that day in the large living room of the inn, and made the occasion a welcome home reception to our Honorary Class Member and Assistant Secretary, Rachel Snow, after a year of travel in South Eastern Europe and the Near East.

The usual pleasant flow of conversation filled the time till dinner was announced, when the company was conducted to the small dining room the class has occupied on two previous occasions. Here an excellent dinner was enjoyed by the following members and guests: Frank Cheney, Alfred Darrow, George Faunce and his daughter, Miss Margaret Faunce, Dr. and Mrs. Charles French, Fred Gooding, Lloyd and Mrs. Lewis and their daughter, Mrs. Wyer, Rachel Snow, and Arthur and Mrs. Walker.

Following the dinner the names of class members who had died in recent years, notices of which had not been duly received, were read. Oscar Llewellyn Patch died August 29, 1930. He was a special student in Course II, 1880-1882. His home was in Lexington, Mass. — Mrs. Ernest Winsor (Anna C. Atkinson) died April 23, 1932. She was a special student in Course V, 1878-1879. Her home was at Chestnut Hill, Mass. — Miss Alice Atkinson Stevens died March 8, 1934. She was a special student in Course V, 1878-1879. Her home was at 20 Charlesgate West, Boston, Mass.

Letters of regret from those unable to be with us were read, in whole or in part, by our Assistant Class Secretary, Rachel Snow. Henry Ross wrote that he was recovering from an attack of bronchitis. We are glad to know that he has recovered, and at the time of writing these



1882 Continued

notes he was away on a vacation. The sympathy of the class goes out to George Chapman who wrote the sad news of his wife's death. Those of the class who attended the Forty-Fifth Reunion will remember with pleasure meeting Mrs. Chapman, who was present with her husband at that time.

Charles and Mrs. Jenkins had just returned from Florida and could not attend the festivity at Baldpate Inn. — John Low, recovering from pneumonia, did not feel strong enough to make the journey from his home on Long Island. Here's hoping for a full return of his strength soon. — Miss Ames, Edgar B. Thompson, and Harry W. Jones wrote regretting their inability to be with us. But where, oh where, were those delightful letters we all hoped would come from Adams and Wardwell?

In the after-dinner hour Rachel Snow gave a most interesting account of her experiences in foreign lands during the year she spent abroad. She spoke of the places she visited in Europe and Asia, from Albania on the west to Persia on the east; mentioning the hot summer weather she met with in the low lands of Persia, and the chill in places with altitudes of 3,000 to 5,000 feet. The uncertainties of travel in those parts were annoying at times. In one instance she was marooned in a wayside tea house for the night with no one to whom she could speak in English. In going to so many places she collected a large assortment of photographs. These she brought to Baldpate and they helped, in a measure, to illustrate her very interesting talk. At the close of her speaking Arthur Walker gracefully thanked Rachel for the pleasure she had given us all. — ALFRED L. DARROW, *Secretary*, 39 Garrison Road, Brookline, Mass. RACHEL P. SNOW, *Assistant Secretary*, Pin Oak Way, Falmouth, Mass.

## 1883

David Wesson, Secretary of the Class for the past five years, died on May 22, ending a long, interesting, and useful life as chemical engineer and inventor. "Wesson Oil," superseding olive oil for many purposes, has a world-wide reputation, while many other improvements in cotton seed oil production and refining were developed by Dave. A full account of his work has been published elsewhere.

Under instructions from the Class President, Horace B. Gale, through the Alumni Secretary, the undersigned has again taken up the labors of Class Secretary, having had a respite of five years after 49 years of continuous service in that capacity — 1880 (sophomore year) to 1928. As Dave Wesson in the February Review set forth an elaborate series of class notes on all members replying, I refer classmates to that issue.

On June 9, 1928, the 45th anniversary of the class was celebrated at Wesson's house in Montclair, N. J., when Chase retired, appointing Dave as his successor. At that time the Class had lost by death, Bardwell, Foran, Gustin, Harriman,

Leonard, and Tompkins. Subsequently others have gone, including Dr. R. W. Hardon (below) and Dave himself. As that reunion was not reported in The Review at that time the Class may renew pleasurable remembrances by recalling the trip from Wesson's home, by automobiles, through old Englishtown, N. J., where lunch was served at the village inn. This inn is filled with beautiful antique furniture and colonial relics and is near Monmouth battlefield. The tenant church in the village was used by the British as a hospital during the battle while a short distance beyond the church we saw at the roadside the noted well of Mollie Pitcher — not the well where "the pitchers are broken," however! Then through Lakewood to Mantoloking on the Jersey shore, where dinner was enjoyed at the Ocean House, near "Sand Joy," the Wesson's summer place. Sailing in Wesson's yacht, *Viking*, occupied the next day.

A verse recited at the dinner pictures the *O tempora! O mores!* of that period, now so strange! "Half an inch, half an inch, half an inch shorter; Skirts are the same for mother and daughter. When the wind blows each of them shows; Half an inch, half an inch more than it ought'er!"

The following account appeared in the *Chicago Tribune* of June 3, 1934: "Dr. Robert Wallace Hardon, surgeon and former instructor in surgery at the Rush Medical School and for more than 30 years at the Post Graduate Medical School, died Friday evening at the Post Graduate hospital after a major operation. — Born in Boston, Mass., 68 years ago, Dr. Hardon was a graduate of both the M.I.T. and the Harvard Medical School. He served as Vice-President and chairman of the Finance Committee of the Post Graduate Medical School and contributed articles to medical journals. — Dr. Hardon, who lived at 1059 Hyde Park Boulevard, was a charter member of the South Shore Country Club and a life member of the Illinois Athletic Club. He is survived by two sisters, Margaret and Jane Hardon, and two brothers, Henry Winthrop Hardon and Kenneth Wilson Hardon." — HARVEY CHASE, *Secretary*, Bridge Street, South Hamilton, Mass.

## 1884

The class, in accordance with a custom begun by Dr. Stratton, sat on the platform with the Corporation and Faculty at graduation Tuesday, June 5, were delightfully entertained, and dined with Dr. and Mrs. Compton at their home. The following were present: Bardwell, V, Bennett, I, Chase, V, Coburn, V, Dearborn, II, Doane, III, Fitch, II, French, I, Gill, V, Hammett, II, Lull, I, Mrs. Maynard (Amy Barnes), V, Miller, V, Prescott, V, Puffer, III, Richards, III, C. S. Robinson, III, T. W. Robinson, III, Stuart, I, Tyler, V, and Whitney, II — 21 in all. Besides these there were present Howard T. Blakeslee, Science Editor of the Associated Press, who delivered the Commencement Address, and Mrs. Blakeslee, Vice-President and Mrs. Bush,

Dean Prescott and Mrs. Prescott, Charles E. Smith '00, President-elect of the Alumni Association, and Mrs. Smith.

The academic procession was noteworthy for its size, and contained two Emeriti Professors, Drs. Tyler and Gill, who had taught at M.I.T. for 43 and 47 years respectively; two other M.I.T. Professors, Bardwell and Puffer, were also there. When it is remembered that but 40 of the 99 affiliated with the Class are now living, and of these 15 were as far away as the Pacific Coast or ill, we are proud to have had 21 out of a possible 25 present.

Of the 99 members of the Class, 16 are now active, 25 are retired, and 58 deceased. Of the 62 classed as regular first-year students 25, or 40%, graduated.

The Class divided into 17 civil engineers, 17 mechanicals, 20 miners, 4 architects, 21 chemists, 2 general course, and 19 belonged to no specific course, not returning the second year. "Nearly two-thirds of the Class may be regarded as having followed lines of work corresponding more or less closely with their undergraduate choice; nearly one-half are presidents or managers of important industrial enterprises"; nine were, or are, professors (12 came back to M.I.T. in 1884 as "assistants", and 4 were officers in the military service, Major-General Weston, Colonel Lyle, General duPont, Captain Appleton; 15 are Masons and 4 Knights Templars. Bonillas, duPont, Gill, Ilsley, Johnson, Newell, C. S. Robinson, T. W. Robinson, Rotch, Weston, and Tyler, 11%, have been or are included in "Who's Who in America"; Fong and Kwong in "Who's Who of Chinese Students in America."

Sixty-six have married, and their children number 148: 75 sons and 73 daughters. Most of these children have attended college, and the following 17 have followed their parent's example at M.I.T.: Adams, I, '05; Baldwin, II, '22; Bonillas, III, '08; Carven, IV, '21; duPont, IX, '17; Helen Gill, S. M. '24; Paul H. Gill, XV, '30; Kennard, VI, '18; William C. Kerr, X, '08; Charles P. Kerr, II, '11; Maynard, II, '23; Mead, IXB, '18; Miller, XV, '20; Morse, VI, '11; Robinson, VI, '16; Sturgis, IV, '32; Whitney, II, '20. Ninety-seven per cent of the Class contributed to the Alumni Fund.

Wednesday, June 6, found 17 of us at the New Ocean House, Swampscott, enjoying the fine weather, a good dinner, and each other's company. Letters were read from absent members, and those present entertained us with stories of their doings since the 40th reunion. These will appear in the 50-Year booklet.

It was the sense of the meeting that we have an annual luncheon, and five-year reunions; the extra 25-Year books are to be distributed to various important libraries and classes. Dearborn was chosen Vice-Secretary.

The Secretary announces with regret the decease of Asa W. Whitney on December 1 at Bristol, Tenn. of angina pectoris. He was born in Philadelphia in 1861, married Helen F. Stebbins of Baltimore in 1890, and leaves four children: in 1923 they adopted a boy and girl. He was



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an "iron doctor" or metallurgist of the Enterprise Wheel and Car Corporation of Bristol, Va. Among some of his activities were the preparation of improved bottle moulds, mixtures of irons for special purposes, and he contributed extensively to technical publications. He was a member of the Episcopal Church and several professional Societies.

With a deep sense of personal loss the Secretary chronicles the death of a classmate. Nahum Ward replied to the reunion invitation stating he was physically unable to come; a little later bronchial pneumonia developed and he died June 13. Ward was born in Roxbury in 1861 and fitted for M.I.T. at the English High School. For 13 years after graduation he was factory manager of N. Ward and Company, later merged with the American Glue Company. As he fell heir to real estate, he has devoted much time to its development. He was active in religious, philosophical, and Masonic societies. He married Mathilde Thomsen of Denmark in 1897, who survives him.

The Secretary was honored with a dinner on May 11 by the members of the Chemical Department on the occasion of the Golden Anniversary of the award of the M.I.T. bachelor's degree, in the Moore Memorial Room. He has been made Professor Emeritus and retired from teaching July 1. He has accepted President Compton's invitation to make "M.I.T. your scientific home, using its facilities and your own private laboratory, and giving to the Chemistry Department the benefit of your wise counsel and experience." He will accordingly still be at the Institute, and engage in his private consulting practice as of yore. — A. H. GILL, *Secretary*, Room 4-053 M.I.T., Cambridge, Mass. S. S. DEARBORN, *Assistant Secretary*, 4 Newport Road, Cambridge, Mass.

## 1887

The annual dinner of the class was held on June 15 at the Parker House, which has been the meeting place of the Class from the time of the passing of Young's Hotel, and as usual was a most enjoyable evening. Taintor, Draper, W. R. Thomas, Carter, Brainerd, Lane, Blake, Mulliken, Coombs, Very, and Cole graced the affair with their presence, while letters of regret and good wishes were read from: H. D. Sears, Kirkham, Hill, Nickels, Sturgis, Merrill, Moody, Barbour, Hobart, Holt, Goss, W. C. Cushing, Pearson, and McColl. President Taintor presided with his usual judicial impartiality and afforded every man an opportunity to express his views on the important questions of the day, while our genial Treasurer, George of Hopedale, let the members down at a cost which was little short of wonderful when one considers the variety of the menu.

Blake has been passing the summer in his "old home town" of Newburyport, after a winter in St. Petersburg, Fla. — Herbert M. Howes passed away at his home, 59 Hersey Street, Hingham, on March 29, after an illness of nearly eight years, during which time he had been

constantly cared for by his devoted wife and sister. — NATHANIEL T. VERY, *Secretary*, 14 Currier Road, Lynn, Mass.

## 1888

The 46th '88 Class Dinner since graduation was combined, or rather submerged, in the fifth "Ned Webster Grand Banquet" given to 21 fortunate members of the Class by Ned Webster on June 9 at his magnificent Chestnut Hill estate. Those present were: Bates, Buttolph, Cheney, Cole, Collins, Conner, Eastman, Ellis, Faunce, Flint, Hamblar, Horn, Lee, Mead, Sjostrom, Reynolds, Runkle, Sawyer, Webster, Williams, and Wood. The gardens were more beautiful than ever, the orchids more wonderful, the delicacies and viands served more delicious, and the hospitality more abundant than on the four previous occasions.

On adjourning to the spacious music room the Secretary read 33 letters from classmates including 12 regrets. Besler started to lay plans to attend our 45th at Rockport a year ago and his plans were worked out just as would be expected from one of the nation's best railroad executives; but this time his son arrived from California to spend the week-end on his way to Paris in connection with the sale of the European rights to manufacture his famous steam-powered air plane and thus prevented Besler from attending his first Webster Banquet. Conner, Ellis, and Hamblar met the Secretary with their cars at the Chestnut Hill Station of the B. & A. and conveyed those arriving by train to the estate. The 12 regrets were from the following: Besler, Bridges, Dean, Faxon, Ferguson, Fuller, Merrell, Quigley, Roper, Stevens, Sweetland, and Thompson. Charlie Stone wired from Locust Valley, N. Y.: "Please give the boys of '88 my regrets and congratulations at the Class Dinner tonight; have been away on vacation and only returned to New York four days ago; regret not being with you all this evening and hope we may have many more reunions in the years to come". Holton wired from Olmsted Falls, Ohio: "Greetings and best wishes to the Classmates of '88". Sanford Thompson wired from Pittsburgh: "Ned's dinner party is an outstanding event of ours, regret absence terribly". From Eagleville, Conn., George U. G. Holman writes expressing his appreciation of Ned's hospitality. Roper expects to be present at our next reunion. Louie Ferguson from Chicago regrets that he lives so far away from his old home and wishes he were nearer so he might see something of his classmates. Luther Bridges had a conflict with '89's Forty-fifth Reunion as he belongs to two classes, but his first love is '88.

The winner of the long-distance medal was "Smoky Joe" Wood, who came all the way from Buffalo. He is getting his arm in shape for our 50th in 1938. Chief-Engineer-of-the-Reunion-Clam-Bakes Charlie Faunce had several ribs broken in an auto crash 12 days before the dinner but he came all the way from New Bedford with Ralph Reynolds of Fall River. It would take a good many broken bones

to keep Faunce from one of Ned's dinners. If the dinner had been ten days later we would have had the pleasure of having Merrell of Cincinnati with us. Our colorful light-weight champion, Quigley of "B'ham Alabam", writes: "Please extend my greetings to every survivor of our dwindling membership and believe me I'll be faithful to the end in supporting its honorable traditions".

Edwin S. Webster was reelected President of the Massachusetts Horticultural Society at the annual meeting recently, when he announced more than 1,000 new members during the past year, bringing the total membership to 7,610. A gold medal was awarded to Mr. and Mrs. Webster for their rose garden at Quissett.

The principal speaker at the Ned Webster banquet was John Runkle. His subject was "My Trip Around the World in a Sailing Ship in 1885". For nearly an hour he thrilled his classmates with vivid tales of storms at sea, mutinies and near mutinies, sights and scenes in Java, Red Sea, Russia, and so on. He was 144 days from New York to Java with a cargo of kerosene, and then on a tramp steamer with a cargo of sugar at St. Petersburg. During this part of the voyage he was with a captain who talked English only and a crew who understood no English. The cabin boy interpreter made a poor translation of the captain's order which resulted in the anchor being let go while the steamer was rushing through shallow water at full speed ahead. Only a very weak link in the anchor cable prevented a serious disaster. Johnnie is certainly a "past master" in the art of telling tales of the sea.

Edward Collins, Jr., S.B., A.M., LL.B., Course VI, died May 1, at his home in Chevy Chase, Washington, D. C. He was born in, and entered the Institute from, Milton, Mass. His father was the late Lieutenant Colonel Edward Collins. After graduation from the Institute he remained as Instructor in Physics for the following six years. He then took a four-year graduate course in chemistry at Harvard obtaining the degree of A.M. For the last 36 years he has been in the U. S. Patent Office in Washington, D. C., advancing to the position of Assistant Chief Examiner. He obtained the degree of LL.B. from the National University, Washington, and was admitted to the bar in the District of Columbia in 1904. He was married in 1917 at the age of 51 and is survived by his widow, sister, and a brother. He was a member of the American Chemical Society, Graduate Club and Chemical Club at Harvard University, M. & P. Club, M.I.T., Sons of the Revolution, and Macedonian Lodge F. and A. M. He was one of the brainiest men in the Class. We shall cherish his memory.

The Secretary received a notice from the Alumni Association of the death of Herbert M. Howes, II, on March 29 at 59 Hersey Street, Hingham, Mass. As he had only an indistinct recollection of Howes, he looked up our four class publications and found mention of him in one only, our Class History published in

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1932. In this he is given as a regular first year student during 1884-85, with home in Somerville. The 1920 Register of Former Students gives only the term of years he spent at Technology, 1883-86. This indicates that Howes entered with the Class of '87 and then re-entered with us, spending two years with '88. This was confirmed by Winthrop Cole '87, with whom the Secretary immediately conferred, finding that he had a large amount of information about Howes, as follows:

Howes was the son of Commodore and Mrs. Frank M. Howes of the Merchants and Miners Line. He was born at Chatham, Mass. He attended the schools in Somerville before entering M.I.T. in 1883. Leaving Technology in 1886, he was employed in a Boston bank for two years and then entered the employ of the Boston *Globe*, being promoted to advertising manager in 1892 and resigning to go with the New York *Journal* in 1901. A few years later he left the newspaper business and went into the insurance business with the Equitable Assurance Company. In 1926 he was stricken with paralysis which ultimately caused his death seven-and-a-half years later. During all of this time he received aid from the "Fund of the Class of '87, M.I.T.," of which Winthrop Cole is Executive Trustee. This is very much to the everlasting credit of those loyal '87 men who established this "Fund" many years ago in order that unfortunate classmates like Howes should not want for proper sustenance during their time of incapacity to support themselves.

Besides a wife, Howes leaves a daughter, a step-son, and three sisters. — BERTRAND R. T. COLLINS, *Secretary*, Chebeague Island, Maine.

## 1889

Our 45th anniversary came and went in a blaze of glory. Twenty-six members appeared at the Corinthian Yacht Club on June 9, and 15 spent the night. Details of the affair have been printed in a booklet and sent to all the members so that a brief summary is enough for the present purpose. Suffice it to say that the hospitality of the Corinthian Yacht Club was unbounded, the cuisine beyond compare, the marine knowledge of spinners, spreaders, Marconi rig, and so on, displayed by the members positively astounding, and the *savoir faire* of the Class in the presence of acres of cocktails commendable. The Classmates ate hearty, drank deep, and carried their liquor like gentlemen.

At the dinner, President Thurber made a charming speech in his best manner and after the Class Classics had been sung and recited, introduced Juddy Wales who read his "Odyssey of Eighty-Nine" which ought to be read by every Tech-man — particularly the lines: "Building new business, handling wads of kale; Keeping our Honor bright — and out of jail" . . .

Slides of portraits of the members and professors taken at our graduation were thrown on the screen and explained by

Zenas Bliss in a happy and carefree vein, and the party broke up feeling that the 46th couldn't come around too soon.

"And who was there?" inquired Mr. Hennessey.

"It reads like a *Who's Who*," said Mr. Dooley. "Some of these guys hadn't been seen since the Freshman year, so busy they were in piling up cash for their old age, and some of them you see all the time but you don't get tired of them. There was the President —" "Roosyvelt?" asked Mr. Hennessey. "Not him," said Mr. Dooley. "President Thurber is elected for life, not wance in four years and he doesn't have to use a radio in giving his orders. Then there was Mr. Hunt, the Treasurer, and a poet named Wales. 'Tis a foine thing to be a poet, Hennessey, for you can say what you like so long as it rhymes. There were the four B's. — Borden, Bliss, Boutwell, and Bridges, and there were Conant, Durfee, and Fiske, and E. V. French, and then, glory be, there was Gleason, Hall, and Howard. Howard, you know, is still a frind of the Kaiser, even after the late unpleasantness and he called on him the other day." "Did he so, now?" said Mr. Hennessey, "and did he ask him in?" "He was glad to," said Mr. Dooley, "for he hasn't seen an '89 man for twinty long years, and he gave him a fotygraf signed 'Wilhelm I.R.', and them letters meant something wance, which is more than some other alfybets iver will. Well, I must hurry along now. There was Johnson, Lewis, Marsh, and who but Morgan, and to think he hadn't been seen for foorty-foive years and he looked younger than iver. Thin there was Mott, Power, Sauveur, Smythe, and Stone; them are the byes now, and Whiting and Williston." "And did the Secretary come?" asked Mr. Hennessey. "Of coorse," said Mr. Dooley, "you don't have to mintion him. He goes with the job, like nutcrackers with lobster claws. You don't have to ask for him, but where would ye be without him? Tell me that now."

Those who were at the Reunion and missed the genial presence of Frank Laws, who was undergoing an operation at the time, will be glad to know, along with the rest of the Class, that Frank has come out in fine shape and is resting for the summer in Vermont.

George Alley died July 19 at the Hotel Charlesgate, Boston, after a long and painful illness. It was the Secretary's privilege to see him occasionally, and he was always cheerful and gay and wanting to know about the boys. The Boston *Herald* of July 20 printed his portrait and the following article: "George Robinson Alley, retired business man, who for 20 years was President of the Massachusetts Automobile Association, died at his home, the Hotel Charlesgate, 535 Beacon Street, yesterday following an illness of four years. Funeral services will be held at the Forest Hills cemetery chapel tomorrow afternoon at three o'clock. Burial will be at the Forest Hills cemetery. Mr. Alley was born in Providence but he was educated and spent most of his life in Greater Boston. He completed

his education at the M.I.T. He was a member of The Country Club and an ardent follower of outdoor sports. His greatest interest was in curling, which is one of the features of The Country Club's winter sports. He competed in the club tournaments and on several occasions had been a member of Brookline teams which met some of the best Canadian and New York curling organizations. Mr. Alley is survived by his widow, Mrs. Miriam F. Alley; a sister, Miss Matilda Alley, of San Diego, Calif., and two brothers, Arthur H. Alley of San Diego and Frederick J. Alley of Boston. — The sympathy of the Class goes out to Hunt in the loss of his wife in June.

Henry Howard has been elected to the Board of Directors, U. S. Chamber of Commerce, and is a member of the joint Canadian-American commission appointed by the U. S. and Canadian Chambers to bring about a closer understanding between the two countries. He also is a member of the Committee on Foreign Commerce, one of the most influential committees of the Chamber. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

## 1890

A card was received from Professor Harry M. Goodwin, who, with his wife and son, spent a few weeks at the Valley Ranch, N. M. They had a delightful time with saddle-back riding, leaving for home September 2.

Colonel Henry M. Waite left his position with the PWA September 1. He has been right-hand man for Harold L. Ickes, Public Works Administrator. Waite will now take charge of Economic Securities in Illinois. — I received word this summer that Darragh and Mrs. deLancey motored through Maine in July. — Charles H. Alden's address is now University Club, Seattle, Wash.; Rev. Henry Mesier's is Post Office Box 124, Farmingdale, L. I., N. Y.

The New York *Times* published the following comment on the death of George Fuller: "George Warren Fuller, one of the leading American authorities on municipal sanitation and water supply, senior member of the firm of Fuller & McClintock, 170 Broadway, consulting engineers, died at 11 o'clock last night (June 15), after a week's illness, at his home, 30 Fifth Avenue, at the age of 65. He is survived by a widow, his third wife, who was Mrs. Eleanor Todd Burt at their marriage in 1918; three sons of an earlier marriage, Myron E., Kemp G., and Asa W. Fuller; and three stepsons, Kenneth, Gordon, and George Fuller.

"One of the many important works performed by Mr. Fuller in his special field of engineering was accomplished in 1925 and 1926 for the City of Chicago, when as chairman of a board of 28 experts he labored on the problem of the advisability of installing a new system of disposing of the sewage of the lake metropolis. — In 1895-1899 he had charge of elaborate tests to determine for the cities of Louisville and Cincinnati the best method of purifying their water



1890 Continued

supply. From 1890 to 1895 he was with the Massachusetts State Board of Health, during the last two years of the period as chairman of the board. Since 1899 Mr. Fuller had been in private practice as a hydraulic and sanitary engineer. — On several occasions he acted as expert for the City of New York in the consideration of vital questions of sanitation; notably, in 1927–1928, that involving the \$16,000,000 sewage-disposal plant on Ward's Island.

"Mr. Fuller was born in Franklin, Mass., on December 21, 1868, a son of George Newell and Harriet Craig Fuller. He took his degree of bachelor of science from the M.I.T. in 1890 and spent the next year in post-graduate study at the University of Berlin.

"Other cities than those mentioned which had employed Mr. Fuller to aid in engineering difficulties were: Baltimore, New Orleans, Columbus, Grand Rapids, and Montreal. — Mr. Fuller was a former President of the American Water Works Association and of the American Public Health Association. He was chairman of the Engineering Foundation, having succeeded Hobart Porter in February, 1933, and Vice-President of the American Society of Civil Engineers. — In June, 1928, Mr. Fuller succeeded Arthur H. Pratt as chief engineer of the North Jersey District Water Supply Commission in charge of the construction of the Wanaque Aqueduct." — GEORGE L. GILMORE, *Secretary*, 57 Hancock Street, Lexington, Mass.

## 1891

Our good friend Warner Steel died on May 22 at Philadelphia. The following is from a Philadelphia paper: "Warner J. Steel, head of a Bristol textile manufacturing plant bearing his name, died today at his home 1811 Delancey Place, after a short illness. He was 65. Mr. Steel was born in Germantown. He was graduated from the Germantown Academy and the M.I.T. before he entered the textile business with his father, the late Henry M. Steel. Upon the death of his father in 1911, Mr. Steel became head of the plant. He married in 1899, Annie McCrae, of this city. He is survived by three sisters, Mrs. Newell C. Bradley and Miss Mariana Steel, of this city, and Mrs. Robert W. Swift, of Milton, Mass. . . ." — Warner took considerable interest in our class affairs during later years. He attended one reunion, and we enjoyed seeing him again.

We were greatly shocked to learn of the sudden death of Will Bassett on July 21 at Cheshire, Conn. The Secretary was at Aiken Manor with Charlie Aiken, and Walter Hopton and his wife were there also, when we got the message. We all knew Will and his family and he was a life-long friend whom we will greatly miss. Few men in our class have been so loyal, generous, and such a regular attendant at class dinners and reunions. He liked us and we were fond of him. Naturally quiet and retiring, as are most scientists and research men, nevertheless he was a pleasant companion, full of in-

teresting information. He had traveled considerably in his various official capacities and had a very wide acquaintance, especially among metallurgists. He was a "kingly gentleman", of sterling character; he led a useful life, always giving the best he had to his family and business problems. While he stood at the top in his chosen profession, it was well said of him: "His greatest achievement was not in metals, but in character."

The following is from the New York Times: "William Hastings Bassett, metallurgical manager of the American Brass Company and President of the American Society for Testing Metals, died suddenly this morning at his home in Cheshire. He was 66 years old. Death was caused by embolism.

"Mr. Bassett, a pioneer metallurgist in the brass industry, had enjoyed a nationwide prestige for several years for his contributions to that branch of the industry. In 1925 he was awarded the James Douglas Medal for research in copper and brass and other nonferrous metals and their alloys and for his contributions to the establishment of high standards of quality. During the World War he was a member of the committee on materials and airplane construction at Washington.

"He was born in New Bedford, Mass., the son of William A. and Amira D. (Mahew) Bassett, of long-established New England ancestry. He was graduated in 1891 from the M.I.T. and in 1903 became chief chemist and metallurgist of the American Brass Company. From 1912 to 1930 he was technical superintendent and metallurgist, and since January 1, 1930, had been metallurgical manager. He was first to apply the spectroscope to routine work in the nonferrous metal industry and first in this country to apply the microscope to the metallography of nonferrous metals. His contributions to this field have led to nationally accepted standardization in chemical analysis and in methods of manufacture.

"He is survived by his widow, Sarah H. Whiting Bassett, whom he married in 1892; one son, William Hastings Bassett Jr., and a daughter, Alice Whiting Bassett, all of Cheshire.

"Mr. Bassett was a director and former President (1930) of the American Institute of Mining and Metallurgical Engineers, a member of the American Institute of Chemical Engineers, Society of Automotive Engineers, Franklin Institute, the British Institute of Metals, and Society of Chemical Industries. He was a 32nd degree Mason and a member of the Knights Templars. His clubs included the Engineers and Chemists of New York."

Edgar Hamilton is now living in Carmel, Calif., his former address being Chicago. Perhaps some of our classmates on the Coast can look him up. Every year the exodus to California continues.

Barney Capen called up the Secretary one Sunday morning and later in the day called again to say that he had a fall and had broken his arm and was waiting for the doctor to come and set it. Later in-

formation was to the effect that the patient was doing well. Luckily it was the left arm so Barney can still write letters. No complaints from the invalid, just the same old optimism and cheerfulness, and what is a broken arm anyway, "it will soon be all right again." And that from a man who has not for many years been able to do most of the things that you and I think essential to our happiness.

An informal outing of some of our classmates was held at Aiken Manor, Webster Lake, N. H., on July 15. It happens that four or five of us have summer homes in southern New Hampshire, all within a radius of 20 or 30 miles, and the excellent idea of getting together during the summer started a few years ago and is now a habit. This time Walter Hopton and the Secretary were invited, although neither of us can qualify as a summer resident of New Hampshire. There were six "couples" present; namely, Mr. and Mrs. Charles W. Aiken, Mr. and Mrs. Walter E. Hopton, Frank W. Howard and daughter-in-law, Mrs. P. H. Howard, Walter B. Douglass and niece, Miss Chase, Mr. and Mrs. Henry A. Fiske, Mr. and Mrs. Gorham Dana.

A warm summer day, Webster Lake in the foreground, backed by New Hampshire hills. The old manor house sits well back from the new concrete highway from Franklin to White River, beautiful trees — pines and spruces — in front of the lake with Aiken Point and bathing beach just across the road. The Hoptons and Fiskes arrived a day or two ahead of time for a few days' visit, the Hoptons heading back for New York State on Tuesday and the Fiskes leaving the same day for a motor trip in the White Mountains. The others came from their summer homes near Lake Sunapee, arriving just before dinner. We were guests of the Aikens for dinner and supper. Walter Hopton furnished some old paper M.I.T. flags for table decorations. After dinner we adjourned to the summer house on Aiken Point and Gorham showed us many pictures taken on his trip around the world from which he returned about a month ago. After supper Gorham showed several reels of movies taken on his trip. Those taken in Japan, China, Java, and Bali were particularly interesting. We sent Barney a "Round Robin" and voted the party a huge success with thanks to the Aikens for their hospitality.

The following Saturday the Fiskes and Mrs. Aiken (Charlie was away on a business trip) made calls on the Sunapee Lake colony. First to the Douglass summer home, which is an old farm, out in the country, which Walter has fixed up in grand shape — private suites, a very interesting collection of old maps, other antiques, and so on. Then to Gorham Dana's for lunch. His home overlooks the lake and is very attractive. As Gorham says, he fell heir to a house full of furniture, so had to build a house somewhere to put it in. As you can understand, he has put in all the gadgets imaginable that lead to comfort and modern convenience. From there to Frank Howard's, or rather the cottages of his sons, right down by



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the water's edge, among the pine trees. And what a rendezvous for all the young people for miles around. A fine large sandy beach with diving float, wharf, and everything that the youthful mind desires, to say nothing of the old folks. The "children" were having swimming races and a Harvard undergrad gave a great exhibition of diving. Here Frank enjoys such leisure as business permits, with his wonderful family, sons and their wives, and numerous grandchildren. Frank deserves all that is coming to him, and it was a great pleasure to meet all the family and see their summer home. Light refreshments on the piazza and then back to Aiken Manor.

A letter from Harry Young written June 28 says: "Here we are in London, Steve Bowen, George Vaillant, and myself, nicely situated in an old house with three sleeping rooms and a living room equipped with a nice old sideboard with plenty of room for bottles, and so on. Went to the Ascot races and made a little money betting on horses we didn't know anything about. We went to Wembley and saw the tennis and we have been all over London and had three meals a day. I am leaving the party tomorrow to go to Bath for a week and sail home the seventh on the *Cythia* to Boston. Steve will sail later and get home about August 1. George expects his wife here about July 9 and sails for Norway and Sweden or some place up there.

"Professor Tyler was on the boat coming over. He went to the English Lakes to tramp around and climb some hills if he can find them, then he is to go to Oxford for a round-table discussion on mathematics. — We missed a Tech dinner here in London a few nights ago. We didn't know about it.

"Went up to Cambridge to see Ball and found he and his wife had gone off on a ten-day motor trip, so we spent the afternoon walking around the various colleges (in the rain) then back to London and then to bed. This is quite a large town and lots of people and they are spending money freely and things seem very prosperous. No need to worry about the poor Britisher any more; he is having a good time. We tried to fathom a cricket game the other day but we had to give it up. It's too deep for us. There are a lot of things we haven't seen but one would have to stay six months to see them all."

Barney has had numerous visitors this summer especially since the accident. Some of them were Carl and Mrs. Read, Ralph and Mrs. Colburn, the Secretary and his wife, Harry and Mrs. Young, Mrs. Palmer and Helen, Harry and Mrs. Cole, Fred Blanchard's niece, Miss Anna Gove (of Greensboro, N. C.) and others. Fred was in a hospital for part of the summer, an operation of some kind, but at last reports he was sitting up and gaining all the time. The Secretary only heard about this just in time to mention it in these notes and will try to get in touch with Fred shortly.

Since the last Review notes, several letters came in from Gorham Dana written on his trip. If memory serves, we left

him in China, and he returned home long ago. He is a good letter writer and you would all like to read his descriptions of life in the tropics. Here is an extract from one letter: "We had a narrow escape yesterday at Penang. We were late getting in and, instead of a full day and night, only had from six p.m. to noon. We had a half day's drive around the island due us and started at 8.30 in an old Willys Knight car that had seen better days. We had Mr. Damon of the Plymouth Cordage Company with us. It was a beautiful drive along the shore with palm trees and rubber trees — some fine houses owned by wealthy Chinese. Then up over a mountain pass through beautiful groves of cocoanut palms winding back and forth with views down steep valleys and up brooks. You could not make much speed on account of the sharp turns, even in a good car. Then we came to a snake temple in which there were dozens of live snakes along the walls and floors, ranging in size from a few inches to big boa constrictors. It was unusual but not very attractive. You were expected to sign your name and donate something for the temple which I imagine is kept up largely for the benefit of tourists.

"We had had some trouble with the car on the way but at the temple it refused to start. There was no self-starter and the poor native chauffeur got in a terrible perspiration cranking it. Finally a group of natives pushed it and got us going. A couple of miles further it stopped again and the chauffeur threw up his hands. It was 11 o'clock, our boat left at 12, and we were some eight miles away. We were worried, all our luggage on the boat — and tickets. A little native bus came along and we jumped in, jammed between natives without much on. We couldn't find out where the thing was bound, but it seemed to be going in the right direction and we jogged on merrily for half an hour. Then we came to a trackless trolley car line and the conductor beckoned us to get off and take the trolley. This did not make much speed as they were stopping for passengers frequently. It got to be 11:40 and the conductor assured us we would reach town in seven minutes. We did and arrived breathless on the wharf at 11:50. Such is life in the tropics."

A letter from Ernest Hersam to Barney speaks of the visit of the Danas to Berkeley, Calif., and his comment to Barney follows: "This visit could not have been if it had not been for you, Barney, perched high as you are in your tower of good will, dispensing Christian goodness as though it were the ordinary thing down here." We are sure that the Danas would echo these sentiments and at least some of the visits and letters sent Gorham were due to arrangements or information which originated in Cohasset.

Robert Ball writes: "We are all well. My son is in Kenya and though his station is within a few miles of the equator, it is quite cold and the same garments that are used in England are the correct thing there. There are glaciers within 100 miles on the slopes of Mt. Kenya.

The reason that he does not suffer from tropical heat is that he is 5,000 feet above sea level and the climate is glorious. He is in the Colonial Civil Service and likes his work very much. The natives are very friendly. The language (Swahili) is comparatively easy to acquire; there are many Dutch and Portuguese words in it, and of course the natives have picked up a fair amount of English. My daughter is in London at her job, and we see her occasionally."

Arthur Alley came East again in June because of the serious condition of his brother, George, who died this summer after a long illness. Arthur returned home the latter part of July, via the Panama Canal. — George Hooper's son graduated in June from California Institute of Technology, with M.S. degree in Chemical Engineering.

Several letters from Charlie Garrison, told of his auto trip to Vancouver, 4,300 miles in three weeks, very scenic and interesting. Anyone familiar with Charlie's letters knows how enjoyable they are and full of information about the country, stopping places, and such things. We cannot print them because of lack of space, but will be glad to loan them to anyone interested in the Pacific Coast country. Few know this section or have seen as much of it as Charlie.

The following appeared in the *Beverly Hills Citizen* of May 24: "The science library of the University of Southern California is indebted to Mrs. A. F. Shattuck of Beverly Hills for the gift of all the scientific magazines from her late husband's library. The list includes the three regular publications of the American Chemical Society, the *Journal of the Franklin Institute*, *Chemical and Metallurgical Engineering*, Bureau of Standards *Journal of Research*, *Transactions of the American Electrochemical Society*, *Science*, *Proceedings of the American Gas Institute*, and other pamphlets, bulletins, and periodicals. Most of the files date back to nearly the beginning of the publication of the magazine, according to Professor Lewis Dillon Roberts of the Department of Chemistry at U.S.C. The monetary value of the collection is expressed in four figures."

A letter from Will Leland speaks of Dana's visit to Berkeley and the Tech Club luncheon. Then follows: "We are having a mean time here with the strike on the waterfront and all shipping is tied up good and tight. About 80 ships are anchored here that should be out with cargoes.

"We are expecting to leave for our vacation about the end of this month and are going to drive to Cheyenne, Wyo., to see the son and his family and then he and I are going to try some fishing together. We will probably go into Grand Teton Park just south of Yellowstone, where the fishing should be of the best."

The following appeared in the *Boston Herald*: "Acclaimed sometime ago by London critics as one of the five outstanding bookplate artists in the world, new honors have just come to a former Boston artist, associated some years ago

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with the art departments of local newspapers, including the *Boston Herald*. Although most artists have to die before the merit of their work is recognized, Elisha Brown Bird is having this usual process reversed, for a volume is now being compiled for publication in Washington that will contain a complete description of the 400 and more bookplates which Mr. Bird has designed during his career for the libraries of book lovers in various parts of the world together with reproductions of the most distinctive.

"Since 1480 when the earliest known movable *ex libris*, representing a shield of arms supported by an angel, was presented to the Carthusian monastery at Buxheim, Germany, persons in all countries who loved books have pasted these individual tokens of ownership inside the front cover of their books, but here in America during later years it has been in a large measure to the pioneering efforts of Mr. Bird, for 11 years President of the American Society of Bookplate Designers and Collectors, that this distinctive medium of art has risen to its present high artistic level. The volume soon to be published, which will be entirely devoted to Mr. Bird's work and will be internationally circulated among libraries and collectors, contains the plates of many known leaders in the world of business, art, society, science, and sports.

"Present-day bookplates, according to Mr. Bird, do not run in any accepted form. A bookplate may be the size of a calling card or it may be large enough to nearly cover the inside of a medium-sized book. Although heraldic symbols are not nearly so popular as they were during the earliest centuries, they are still used upon occasion, but in all of Mr. Bird's bookplates, the design is always in keeping with the tastes of the owner of the library.

"Bookplates today are not a luxury but a necessity for the man who desires to beautify his library," says Mr. Bird, "but they must first of all express the individuality of the owner. The design must pay strict attention to ornamentation, lettering, good figure work, and composition. Therefore, a good bookplate designer must be part draftsman, part architect, and most of all a creative artist."

"Mr. Bird, now an internationally known figure of art, is a graduate of the M.I.T. and was one of the undergraduate editors of *Technique*. Upon graduation, he became a cartoonist with the *Boston Herald*, later going with several other papers and was the first artist in America to sketch baseball games while they were in progress. Later, in his studio in the old Niles building on School Street, he commenced his serious work on bookplates and about ten or 15 years ago went to New York, where now, in addition to bookplate activities, he is promotion designer for the *New York Times*. In addition to the new book containing Mr. Bird's complete collection of bookplates, partial collections of his work can be

seen on permanent display at Harvard, Yale, and in the fine arts department of the New York Public Library at 42nd Street." — HENRY A. FISKE, *Secretary*, Grinnell Company Inc., 260 West Exchange Street, Providence, R. I. Barnard Capen, *Assistant Secretary*, The Early Convalescent Home, Cohasset, Mass.

## 1894

In an earlier communication the general plans for the 40th anniversary of our departure as a class from the Institute were described. Now it has become history, and a brief account may be of interest both to those who were unable to join in the festivities and as a record of events of happy memory for those who were present. The general interest which was manifested by the class as indicated by the response to the several letters sent out was most gratifying to the Secretary, and he wishes at the outset to give cordial thanks to all who supported the efforts of the committee so generously in every way. In accordance with the program planned the first event was a luncheon at Walker Memorial. This was held in the Faculty dining-room and was most enjoyable. We had invited as special guests of the class all the local surviving professors and instructors on the staff during our student days as undergraduates, and it was a great pleasure to welcome them. Headed by those grand old chaps Professor (Bobby) Richards and Professor (Pa) Lambirth, the list ranged down to the youths who had preceded ourselves by but few years. The list is as follows: R. H. Richards '68, J. R. Lambirth, C. F. Allen '72, A. E. Burton, H. W. Tyler '84, F. S. Woods, F. H. Bailey, H. E. Clifford '86, D. P. Bartlett '86, A. G. Robbins '87, R. P. Bigelow, and H. M. Goodwin '90. Last moment regrets were received from Professors D. Porter, F. A. Laws '89, and N. R. George, and they may be assured that their inability to attend was a real disappointment to the '94 contingent. President Compton had hoped to be present, but was obliged to be in Washington on that day, and his place was taken by Vice-President Bush.

This was a real reunion event, as in some cases it was the first meeting between classmates or between members of the class and their former teachers since undergraduate days. One professor, now emeritus, remarked that in this gathering it was impossible to distinguish by appearance between the old teachers and the old pupils. Evidently we have grown to a respectable maturity!

The members of the class attending the luncheon were: C. G. Abbot, W. V. Batson, N. S. Bean, W. H. Bovey, J. W. Chapman, N. Cheney, A. A. Claffin, President H. A. Crary, T. P. Curtis, N. B. Day, J. N. Ferguson, R. W. Gilkey, C. A. Howes, E. M. Hunt, E. S. Jenckes, W. Jenney, W. H. King, A. A. Lacount, F. W. Lovejoy, W. D. McJennett, L. R. Nash, G. Owen, W. H. Pratt, S. C. Prescott, D. W. Richards, W. H. Sayward, Jr., G. A. Taber, A. B. Tenney, H. E. Warren, and W. M. Wheildon.

After our enjoyable luncheon, President Crary welcomed the group and especially our old professors and called upon Vice-President Bush for a few words. The Vice-President welcomed the class and its guests to the Institute officially, and stated that Dr. Compton had asked him to express his sincere regret that he could not be present and greet the class and the old professors personally. Aside from the few kind and appreciative words of the Vice-President (who was by far the youngest man present), there was no speechifying, but there was something better — a very jolly and friendly period of renewal of old acquaintance and exchange of reminiscences. It is believed that this is the first time when a class holding an anniversary reunion has asked all its former teachers to join in such a celebration, and it was quite evident that the guests found it an occasion of enjoyment and satisfaction. It certainly was a great pleasure to the class to have this opportunity to express respect and honor for the men who did much toward the shaping of our careers.

After the luncheon, some of the men visited the buildings and inspected some of the new laboratories, that of spectroscopy being a point of particular interest. Then came the trip to East Bay Lodge on the Cape by motor. Enough cars were available to meet requirements most comfortably, in pairs and threes, and this gave opportunity for the course mates and fraternity brothers of long ago to pick up again the threads of old associations. Unfortunately, a few men were unable to go to the Cape. Curtis, Day, Howes, Lacount, and Pratt were thus forced to forego the events of Saturday and Sunday. We had, however, the good fortune to add to our members by picking up T. Varney on the way, and L. K. Davis, L. R. Moore, P. C. Newbegin, and R. S. Weston came on Saturday morning. Friday evening was spent in a jolly get-together, with songs and recitations by Abbot and Sayward, and a showing of colored movies and the new Technology film by Owen as particular features. Cheney, as captain of golf, organized the tournament which is a fixture in '94 reunions. Warren got up a party for the Round Hill Experimental Station, and others planned for swimming and boating. These all came off as planned on Saturday to the great enjoyment of all.

We were much pleased on Saturday morning to receive a cordial invitation from F. W. Fabyan '93 to drop in at his summer place at Buzzards Bay if any of us happened to be going in that direction. It so happened that the Round Hill party had left the Lodge before this telephone call was received, but all were duly appreciative of this courtesy. Another pleasing incident of the morning was the receipt of a cordial message from 1914 which was holding its 20th reunion at Oyster Harbors not far away. A reply message of thanks and congratulation was promptly dispatched. These amenities add distinctly to the enjoyment of reunion events. After luncheon, there



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were several additions to the list of golfers, and another group set off for a sailing expedition, and still others for swimming and touring. A delegation went to call on 1914 but they were apparently on the golf links or otherwise engaged away from the Oyster Harbors Clubhouse.

The high point of the reunion came with the dinner on Saturday evening when we gathered about a single long table and after a roll call attacked the excellent class dinner that Mr. Brown had especially arranged for us. Following this, we adjourned to the lounge which was turned over for sole use of the class. President Horace Crary called the meeting to order, and announced that in place of any formal speaking each man would be asked to speak briefly on the most interesting things in his career. The secretary then called on the men in alphabetical order. C. G. Abbot gave just the right start to this program with a three minute talk on his travels in six continents in pursuit of suitable places to establish observatories for the study of solar radiation. The others followed in turn, some humorous, some serious, but all extremely interesting. It was unanimously asserted to be the most unique and interesting set of after dinner speeches that class members had ever enjoyed.

Following these, the secretary made a brief report, including the necrology since our reunion of 1929. A class election was held, and Horace Crary was unanimously and vociferously reelected, despite his protestations that this honor should not be given him a second time. The class overruled his objection, the Secretary calling for the vote. The class meeting then formally adjourned. The award of golf prizes was made by Cheney. Suffice it to say that the players carrying off the honors were Bean and Crary, who after 72 holes were practically alike in their totals, and no one else was a dangerous competitor. The Secretary is sure that the players having the largest score and the worst single hole will be satisfied to be nameless.

On Sunday forenoon our little group began to scatter as men found it necessary to get boats and trains for the return to normal activities. Those remaining put in another round of golf, and after dinner the last handshakes and farewells marked the end of our "fortieth." It was a fine reunion — especially enjoyable because of the presence of a number of men who have not attended previous ones. On the other hand, we greatly missed those who were with us in earlier meetings but have now passed over the Great Divide. We also regretted deeply that a number of men, including Bates, Greenleaf, Pollock, Hazelton, Peet, Lacount, Pratt, Schiertz, Shurcliff, Thropp, and Tidd, who had expressed the intention of being with us at this time, were obliged at the last minute to change their plans. We shall hope for better luck next year and at the forty-fifth.

It is now my sad duty to report the death on June 25 of one of our most loved and loyal members, Joseph Warren Phelan. Although in impaired health for

some time, Phelan had until very recently attended to his duties as Professor of Inorganic Chemistry in charge of the work in general chemistry of the first year at the Institute. He was more than an ordinary professor; he was friend and father to many a freshman who found in him a wise adviser and a sympathetic listener. It is not without significance that he was voted the most popular professor by the graduating Class of '34. Born in Boston in 1871, he graduated from the East Boston High School, and entered the Institute in 1890. Here he enrolled in the course in Chemistry, but during his undergraduate days had little thought of entering the teaching profession. On graduation he was asked to return as an assistant. His advancement through all the grades to a full professorship demonstrates the regard in which his work and his character were held. He had been in the service of the Institute for 40 years, and as he knew a very large percentage of each first-year class personally, he probably had a more extended acquaintance among the students of the last four decades than any other man on the staff. For many years his interests included industrial chemical operations in a consulting capacity, and he also had considerable familiarity with mining and metallurgical processes. He was joint author and translator of several books on general and industrial chemistry. Phelan married Miss Florence Kimball, Smith '96, who died several years ago. Three children were born to them: John K. Phelan, a graduate of Tufts and formerly instructor in Physics at the Institute, Robert K. Phelan, M.I.T. '31, and Sarah Phelan, a graduate of Jackson College. Phelan was of an old Nantucket family, and the ancestral place there has been his summer home for many years. It is impossible for the secretary, who has known him intimately for more than 40 years, to express his own sense of personal loss, for he was a tried and true friend, generous in his sympathies and kind in all his human relations. He will be greatly missed and mourned at the Institute, but most of all by those who have been his daily associates for many years. The members of '94 will feel a real sense of bereavement, particularly the chemists who will feel a poignant sense of loss in having another of our group pass from us so quickly after the death of our lamented Piper. For many years these two and their families had been especially intimate.

The Secretary wishes it were possible to quote from the many letters received relative to our class in the exchange of correspondence regarding reunion. He is happy to be able to state that through the generous action of President Crary a 40-year class book will be prepared and sent to all members for whom addresses are obtainable. Cooperation of all in making this record as complete as possible is urgently requested.

These notes were begun while flying over the English Channel in one of the great planes of Imperial Airways. The Secretary, his wife, and daughter, and a friend of the latter, sailed from New

York on July 14, landing at Southampton six days later. Here he found a most cordial invitation from T. C. Davies to visit at his delightful home, Hawksley Hurst, near Liss in Hampshire. The kindness of Davies and his wife and other members of his family can never be forgotten. The hospitality extended was so genuine and sincere, and the entertainment provided for us so delightful that we left his beautiful estate feeling not only that we had experienced the real significance of friendship but that our visit in this charming family was the high spot of our tour for the summer. It is a pleasure to record that Davies' elder son, a graduate of Cambridge, is to spend the coming year at the Institute in work in business and engineering administration. We hope to be able to minister in some degree to his enjoyment at Tech.

These notes are sent from Paris, where our stay is brief. Attempts to call on Welles Bosworth '89, the architect of the buildings of M.I.T., A. G. Garfield '86, A. E. Baldwin '96, and G. W. Bakeman '13 have resulted in failure. Certainly August is the great vacation month in Paris. Geneva is our point of entry for a week or so in Switzerland, and then Oberammergau, this being the 300th anniversary of the famous religious production undertaken in token of thankfulness for escape from epidemic and disaster. Returning via Munich and Nuremberg (unless Hitlerian activities cause a change of plan), a few days in Belgium and additional time in England and Scotland will bring us to Liverpool to embark for Boston on September 1. It has been fine to have a few weeks in Europe; it will be equally fine to get "back to Tech." — S. C. PRESCOTT, Secretary, Room 3-203, M.I.T., Cambridge, Mass.

## 1895

Your secretary must acknowledge his regrets at being unable to report a number of interesting items of '95 news in time for this issue. The delay was caused through absence from his home, being engaged on a tour of investigations throughout a number of counties of Massachusetts, for the Massachusetts Motor Vehicle Retailing Trade Code.

The next issue of The Review will have all the news to date. Tentative plans for the '95 reunion in 1935 will be announced. — LUTHER K. YODER, Secretary, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, Assistant Secretary, Graybar Electric Company, 420 Lexington Avenue, New York, N. Y.

## 1896

The Secretary trusts that classmates have gotten through the summer satisfactorily and acquired a change, a rest, and a little tan. Locke was in New Hampshire for a while during August and Rockwell, among other things, was at Moosehead Lake in June, where he reported great fishing, beautiful flowers, and song birds. He and his partner took about 15 salmon and five "lakers" but, of course, the big ones got away as usual. — Clem Tower called on the Secre-



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tary on June 1. Although Tower lives in Concord, Mass., and is at his factory making Plymouth Rock Gelatin right in Cambridge practically every day, this was the first time that the Secretary has seen Tower for many years. The top of his head is rather scanty of hair. He reported that he was planning an automobile trip to California during the summer.

Con Young called at Technology on June 8 with Mrs. Young. They were spending a few days in Malden on their way back from Florida before going to their summer home at Bass River on Cape Cod. It was feasible to take lunch with Con and during the luncheon period the Secretary was regaled with some new stories and experiences, told in Con's inimitable way. — On June 2, W. E. Haseltine made a pleasant call on the Secretary. He, with his wife and daughter, was at Technology for Commencement as his son received his degree in Course VI. He also has another son at Harvard. It is interesting that in addition to young Haseltine, there were other sons of '96 men in the Class of 1934, including: M. S. Jameson, Jr., XV; George Merryweather, XV; Herbert P. Beers, Jr., IV; John J. Callan, Jr., IV; and there may be some more whom the Secretary did not notice.

On June 22 Mark Allen arrived in town with his son, Richard, who is at the present time a student at Kenyon College in Ohio. The boy is contemplating post-graduate work in business school and their visit to Boston was for the purpose of looking over the Harvard Business School and the Babson Institute at Wellesley. Rockwell and Locke had a very pleasant dinner and evening with Mark and Richard.

It is evidence of important doings of '96 men that in a Boston paper on June 20, 1934, three names appeared. Myron Pierce and his wife were suing the New Haven Railroad for injuries received by Mrs. Pierce in a pullman sleeper when she was struck and violently shaken by a conductor while she was asleep. — Paul Litchfield was reported as telling the National Association of Purchasing Agents that the NRA had fallen short of expectations. — E. C. Hultman, as Police Commissioner of Boston, had a bill in equity filed against him and the Boston Police Department enjoining them from annoying a lady any further by the use of the Lie Detector.

Arthur Baldwin has reported that Dave Beaman, who was touring Europe with his wife and son, appeared in Paris in July and they had a nice visit together. Incidentally, during Arthur's stay in Paris he has been delighted at various times to meet classmates and Technology alumni and it is his special desire that if any '96 men should be in Paris at any time they will not fail to get in touch with him. Arthur was designated as observer by the United States Government at the session of the International Labor Organization of the League of Nations, held at Geneva in June, and on that occasion he gave an interesting address setting forth the objectives and ac-

complishments of the Recovery Program in the United States. This is particularly valuable because it expresses the views of the man across the water who knows what is going on in America and at the same time is far enough away to have a broad outlook.

Frederick W. McCarter, who was in our class from 1892-94 studying architecture died on May 31, 1934. He was born in Holbrook, Mass., the son of Charles H. and Sarah B. Thompson McCarter. He had been a public accountant in Boston and a resident of Brookline, and at the time of his death and for a considerable period preceding, was manager of the W. A. Bagshaw Company of Lowell at its Boston office in the Tremont Building. He is survived by his wife, Flora A. Thayer McCarter, and one son, Kenneth. — Haven J. Hilliard, who was in our class as a special student in chemistry, died on July 15, 1934. For many years he had been engaged in chemical work in Boston, but for a number of years past he had been at the Home for Aged Men in Boston. He was born in North Conway, N. H., in 1870. He studied at St. Paul's School and was of the Class of '90 at Harvard, and the Class of '94 of the Lawrence Scientific School. He never married and is survived by a brother, Edmund, who has lived in Paris for the past few years.

Professor Leonard P. Dickinson died on June 3, 1934, in Burlington, Vt., where he had been for many years professor of electrical engineering and Head of the Electrical Engineering Department at the University of Vermont. His illness dates back two years or more when he began to have heart trouble, but this last year had seemed to make a good recovery and had resumed his teaching work on a nearly full-time basis. Even from his last attack, which occurred about three weeks before his death, he seemed to be rallying until the end came very suddenly. He was born in Hill, N. H., on May 3, 1874. He went through the local schools and the Manchester High School before coming to Technology. After graduation he was with the American Tel. & Tel. Company and also the General Electric Company. He then went into the teaching profession, successively occupying the chairs of physics and electrical engineering at Lafayette College, Rhode Island State College, Robert College (Constantinople), and finally the University of Vermont, where he went in 1921. He spent his sabbatical year (1925-26) doing graduate study at Leland Stanford and received the degree of A.M. On Christmas Day, 1899, he married Miss Anna Louise McClure of Syracuse, N. Y. His widow survives him with a daughter, Dorothy, who was graduated from the University of Vermont in 1930 and is now on the library staff of Clark University in Worcester.

His colleagues speak most highly of Dickinson's ability as a teacher, possessing the qualities of sympathy and patience and the ability to give clear exposition. While convalescing from his earlier illness he made the happy discovery that he

possessed a gift for pen and ink work, and the excellence of his sketches evoked high praise from competent sources. He was deeply religious and a hard worker in the church and Y.M.C.A. affairs. At the time of his death he was clerk of the College Street Church in Burlington. He was also interested in masonry, holding membership in all the divisions up through the Commandery. He was a member of the American Association for the Advancement of Science, the American Institute of Electrical Engineers, the American Society for the Promotion of Engineering Education, the Sigma Xi, and other scientific bodies. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

## 1900

The coming year bids fair to be a real one for this class as next June we are to celebrate our 35th. Numerous plans are being formulated and one of the preliminary steps is a dinner in November at which time different ideas will be discussed and a committee appointed to take charge of the details. The Class is standing out in front this year, having one of its own as President of the Alumni Association, and whatever plans are made will fit in with Charlie Smith's ideas of an Alumni Day. He is already on the job on this matter and the special committee appointed will bring in a formal report at the October meeting of the Council. We are in for a big time anyway so reserve the first days of June for further advices.

Jim Batcheller dropped in to the office last June on his way East to see his son graduated from Annapolis, and among other things he allowed that this was the first time in 15 years that he had come on by train. Jim was in excellent health and years sit lightly on his brow. — A letter from Chalmers brings greetings to all the members. He is at present Technical Director of the Jaray Streamline Corporation of New York, which is having litigation against Chrysler Airflow Cars.

Several letters from the ladies of the class have been received and one of them, Jane Bartlett, writes from Washington, D. C., as follows: "The only news of importance I have to add since 1930 is that a year ago (November, 1932) I retired from business. I may go into something again but not for another year. As I am not settled here, the best address for you to have is that of my ancestral home which is still mine, West Bridgewater, Mass. That address will always reach me."

Margaret Stannard (Mrs. J. H.) writes in part: "My grandsons are not yet in college, one is preparing at Phillips Andover, the other at Middlesex School, Concord. In June, 1931, I retired as Director of The Garland School of Home-making (which I founded in 1902) and was made Director Emerita. In July I started on a trip around the world, traveling independently and was gone a year, a splendid experience. This year I

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am living in Andover, Mass. (111 Main Street), and am writing a little, for fun not for publication at present. My permanent address is 409 Commonwealth Avenue, Boston (The Garland School). — Ethel Fifield Brooks (Mrs. L. R.) sends a few notes from Rio Grande City, Texas; has been County Chairman of Red Cross for 12 years and very busy lately with a flood and flour and cotton distribution. — We have received notice from the Alumni Association of the death last April of Miss Lucy Mabel Allen, V, at Lynn, Mass. — C. BURTON COTTING, Secretary, 111 Devonshire Street, Boston, Mass.

## 1901

The summer solstice is on the wane, and I turn me again to imparting in my simple Anglo-Saxon — or should we now say Nordic? — way those priceless gems y-clept "interesting news about yourself or any other member of the class" that have been raining on me with truly torrential fervor since late July. How you all have such adventurous and colorful lives and are so volubly vocal about the details has ever been a source of wonder to me. Think of the Casanova-like implications of the gravid statement "Same as last year" which comes to me from and by a sure hand. What wealth of imagery, of gossamer phantasy, of high and gracious adventure one can read into the intriguing report of "nothing" that reaches me with a delicate salacity from another well-known member of our little group.

I say nothing of the burden laid upon your humble secretary in editing these privileged communications, the languid fumes of frankincense and myrrh — page Fred Clapp — which must be stifled, the jewelled sheen of emerald and ruby and sapphire that must be dulled, the embellishing blocks of sard and lapis, and verdigris — no, that's another allusion — that must be cut away. Anonymity and propriety must and shall be preserved, and it is a labor of love for me to temper the flaming scarlets and glowing yellows of your unbridled revelations to more somber tones, restful to the editorial eye.

Speaking of which, I've just had a letter from Fred Clapp — in person (v.s.). He writes from Teheran, that subdued cachinnatory capital of the gorgeous East. He tells me that he has chanced on a lot of the elect — by which I mean our alumni — in that part of the world, mirthfully employed as befits their adaptability. And the Tech man *sui generis* is adaptable — think of Arthur Eveland in serape and sombrero lisping in pure Castilian, Denny Haley mounted on his trusty llama (this does not refer to the head of the Buddhist faith but to a humble beast of burden, only the names are alike) scouring the passes of the Andes — I don't mean in a domestic sense. I seem to be getting a little involved here, but you will follow my ratiocinations with that prescience that has kept so many of you out of jail and the brain trust. Stout fellows, all.

Let us turn to something less debatable. Under the date of April 3 — why they missed it, I don't know — and reaching me in mid July of the same year (the new deal is speeding up the Cambridge Post Office in a way that bids fair to wreck the efficient personnel who took office eight months before Washington took over the Continental Army under an adjacent tree, which the P.O. people have outlived and it was an elm, too) well, anyhow, I got the following through the official Institute channels: "Professor Theodore H. Taft has been commissioned as a Lieutenant Commander in the Ordnance Department of the U. S. Naval Reserves. Professor Taft's specialty in this direction has to do with the power generation and operation of torpedoes and allied equipment." I give it to you as it came to me, but without carping, it does seem to me that they might have phrased the matter a little more delicately. It was Teddy, you remember, in the carefree days of our halcyon youth — but why turn back the pages of time? He has lived it down, and the kindest thing is to let bygones be bygones. Teddy is to be addressed in the future as "Loot," this a delicate tribute to the present administration, and receive a salute of seven — "allied equipment."

I had been minded to tell you of Perk Parrock — for the moment at least leading the high, middle and low Jinks of the Bohemian Club in San Francisco, of Phil Moore touring Germany in a Ford banana and with his right arm permanently raised toward Heaven — guess why — but I'll reserve these for a later and more auspicious occasion. Don't forget the Class Reunion next summer. You'll be hearing of it from time to time. And so from the top — well, pretty near, anyhow — of a Green Mountain hill I give you greeting and farewell. *Editor's Note.* The last is not to be taken seriously, we regret to say. — ALLAN WINTER ROWE, Secretary, 4 Newbury Street, Boston, Mass.

## 1903

One of the most famous of the class, Raymond M. Hood, IV, internationally known architect, died August 14, in Stamford, Conn., of arthritis, of which he had been ill about a year. He was born in Pawtucket, R. I., in 1881. Since 1903, he had practiced his profession in New York City. Stamford, where his home was, remembers him for the prominent part he took in town meetings, attacking the alleged neglect of its waterfront, and accusing the town of creating a slum district. At his own house, he developed a terrace with an outside fireplace and Stamford residents said the Hoods ate outdoors on their terrace even in extremely cold weather. In New York City and the world at large, he played an important part in the development of the modern skyscraper, being a pioneer in adding ornateness to its utility. The Chicago Tribune Tower, the American Radiator building, and New York Daily News building were designed by him and he was one of the consultants in the de-

velopment of Rockefeller Center and the Chicago Century of Progress fair buildings. He maintained that tall skyscrapers were not an evil, but that men should live in great structures; that a building 7,000 feet high was structurally possible, and that buildings of the future would top all present ones.

For outstanding work in his field, he was decorated with the Chevalier Order of the Crown of Belgium. He served as a member of the international jury to select a design for a memorial to Columbus on the island of Santo Domingo, and was a member of the American Institute of Architects, past President of the Architectural League of New York, and a trustee of the Beaux-Arts Institute of Design in New York. He leaves a widow and three children to whom the class extends its sympathy. — The Secretary is indebted to Associated Press reports for the above information.

No reunion was planned for this year, in view of the times and the odd year. We hope that those of the class who have attended the various class gatherings during the past five years will be keen to attend the next one. There was such a surprisingly good number for '03 out to the big alumni dinner last winter, and we had such a good time, that we urge on all who read this to keep next winter's dinner in mind and plan to attend. — Meanwhile, any news of class members is welcomed by the secretaries. — FREDERIC A. EUSTIS, Secretary, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, Assistant Secretary, 89 Broad Street, Boston, Mass.

## 1904

I trust that you have all spent a very pleasant and enjoyable summer and are now ready for what may come forth during the ensuing year.

The 30th Anniversary of our Class was celebrated by the annual reunion held at East Bay Lodge, Osterville, on June 22, 23, and 24, and while this reunion by no means approached the 25th Anniversary celebration, either in attendance or activities, it was thoroughly enjoyed by all those who attended.

The celebration started with a luncheon at the University Club at which about a dozen members were present, following which the usual automobile parade to Osterville ensued. There were no special events scheduled for this anniversary but the entertainment and the general speed of the affair were in the hands of a committee consisting of Hump Haley. Hump worked like a beaver on these matters and staged prize drawings, whoopee parties, and a grand torchlight parade to the beach on Saturday night about 11 o'clock, which was highly enjoyed by the participants as well as by the populace of the surrounding territory. The maximum attendance was at the dinner on Saturday night when 17 were present. The weather was unusually good for a 1904 class reunion, it raining only for a few hours on Saturday morning, and the gathering came to an end on Sunday afternoon, it being voted the most enjoy-



1904 Continued

able by the following classmates who were present: Parker, Dennie, Munster, Mert Emerson, Jack Draper, Lang, Fred Farrell, Galusha, Kendall, Haley, Stevens, Holcombe, Strebbins, Comstock, Phil Sweetser, Sutton, and Gene Russell.

An item of great interest to our classmates is the announcement of the birth of a daughter, Cynthia, to Mr. and Mrs. Chick Emerson, the happy event occurring on July 23. I talked with Chick about a month after the birthday and found that father, mother, and daughter were all doing well at that time. I am sure we all congratulate Mrs. Emerson and Chick on the latest accession to the class children.

Mert Emerson is the sponsor for the information that R. E. Lee Taylor of Baltimore is a member of the Board of Review of the Public Works Administration. Mert states that the Board of Review is the supreme court of the Administration and that as usual it requires a member of the Class of 1904 to see that everything is proper among the great affairs of the country. — E. F. Rockwood holds a commission as major in the U. S. Army Reserve and has been stationed during the past summer at Fort Devens connected with the Quartermasters Department.

Under date of August 13 I received the following letter from Selby Haar which contains items of interest about some of our other classmates: "First let me apologize for missing the class reunion. I did so much want to be there but obstacles arose as usual. This year it was testifying as a witness in a suit against the city on account of some provisions of the civil service laws. We were at it from 10 in the morning to 11 or 12 at night, and before I realized it, it was too late to send a greeting to you all. I am sending you the \$2 that you asked for.

"Not so long ago Kaiser appeared in my office. He was returning to Pittsburgh from New London where he buried his mother. He was uncertain if he would move to New London to live because he no longer was in business in Pittsburgh, and his brother is in New London. He looks just the same as 20 years ago. — Last week on Broadway I met a classmate, whom, I am ashamed to say, I do not know very well. I think he is W. T. Wilson, Course I. His wife has to go into the hospital for a long course of treatment, and he is breaking up his home and moving into a small apartment on Tie-mann Place west of Broadway.

"I saw Eddie Rupf some time ago. He looked very thin, relatively, and quite gray. He had been sick. That is the last item I have of what may be called news. My work is still the same. The city's money gave out, and we are trying to carry on on money borrowed from the Federal Government. So wishing you a pleasant summer, I am. . . ."

I am sorry the notes are not more voluminous. However, there will be another issue of the notes in two months and I hope I shall be able to give you more items at that time. — HENRY W. STEVENS, *Secretary*, 12 Garrison Street,

Chestnut Hill, Mass. AMASA M. HOLCOMBE, *Assistant Secretary*, 8 Rosemary Street, Chevy Chase, Md.

## 1906

The *Electrical World* of June 23 included the following notice regarding Dana Wood, I: "Dana M. Wood, formerly hydraulic engineer of the Stone and Webster Engineering Corporation and more recently consulting engineer with offices at Boston, Mass., has been appointed senior hydraulic engineer of the Tennessee Valley Authority, effective July 2. He will have charge of stream flow and water power investigations and will make his headquarters at Knoxville, Tenn."

The one member of the class who is best known in Boston and vicinity is the Rev. Michael J. Ahern, who has attained much publicity through his broadcasting activities. The *Boston Transcript* of June 30 devoted a full column to Father Ahern's seventh and concluding radio lecture on popular science subjects. His broadcasts are being resumed this fall, beginning Friday, September 7, under the title of the "Chemical Question Box."

On June 22, K. E. Terry, II, VI, was elected President of the American Pulp and Paper Mill Superintendents' Association at its business session at Poland Spring. Mr. Terry has been associated with the S. D. Warren Company since 1910 and was the first Maine man to be chosen head of this large organization. He is a native of New Bedford, Mass., and after graduation was with the Boston Elevated, American Tool and Machine Company, and the Grixan Spencer Company before associating with S. D. Warren. He is a member of the American Society of Civil Engineers, Technology Club of Maine, the Woodfords Club, and the Economic Club of Portland.

The Portland, Maine, *Press Herald* of June 25 included a note to the effect that Dr. C. E. Fogg of Portland was chosen *grandes Chef de Gare* at the annual election of the 40 and 8, held in Bangor, Maine. Dr. Fogg, who is now a practising physician at Portland, Maine, was at the Institute but a short time. It is natural for the writer to associate Dr. Fogg with military affairs as he has a vivid recollection of being in Captain Fogg's company of the Freshman Battalion.

The following letter, penned by E. Sherman Chase to the editor of the *Boston Herald*, is reproduced from the June 4 issue of the *Journal of the Engineering Societies of Boston*: "Your recent editorial, 'Democracy and Water,' is a well-deserved tribute to the administrators of our public water supply systems. Not only are the gigantic water supply extensions of New York and Boston examples of able engineering and upright administration, but the great majority of our municipal water works also are operated efficiently and honestly. Water works superintendents are almost invariably hard-working, conscientious officials whose compensation is rarely commensurate with the services rendered. Apropos of the immediately preceding statement, it is interesting to note that

the metropolitan water board of London, to whose £\$10,000,000 project you refer, has retained as chief engineer an eminent British water engineer, Lt.-Col. Davidson, at a yearly salary of about \$25,000 (£\$5,000). So far as the writer is informed, no such salary has ever been paid a water works official in the United States, where the general scale of salaries and wages is distinctly higher than abroad. Is it possible that the British brand of democracy is more appreciative of outstanding specialized ability in public servants than is ours? And may not this fact, if it is a fact, account in some measure for the 'failure of American democracy' in municipal administration? — E. Sherman Chase, President, New England Water Works Association, Boston, May 18."

We have heard rumors that Nugent Fallon has become part of the new deal by joining the Home Owners Loan Corporation. This is confirmed by his latest address which reads: Home Owners Loan Corporation, Room 7338, New Post Office Building, Washington, D. C. — The Bell Laboratories *Record* of July noted that O. B. Blackwell talked on Technological Advance in Communication at the Illinois Host House at the World's Fair in Chicago, under the auspices of the Chicago Woman's Club, in its series of lectures on Society Tomorrow. The American Telephone and Telegraph Company have recently effected a change in organization whereby the development and research department has been joined with the Bell Telephone Laboratories. As a result of this, Blackwell is now Director of Transmission Development of the Bell Telephone Laboratories. Incidentally, he is a member of the joint committee on Plant Coordination of the Edison Electric Institute and the Bell Telephone System.

The following is taken from the *Boston Herald* of August 22: "Dr. Oscar S. Pulman of New York City was elected President of Babson's Reports, Inc., at the annual meeting of stockholders yesterday. Dr. Pulman, who will take over his new duties on September 4, succeeds Leroy D. Peavey who has resigned on account of ill health. Peavey has been with the organization 25 years and has been President nine years.

"Dr. Pulman is not only a financial expert with considerable experience in the handling of large trust funds, but he has also had an intensive practical business career as an industrial executive. He is thus particularly well qualified to handle the many financial and business problems which will come to him in his new post. In addition to holding degrees from Yale University and M.I.T., he is a graduate of Babson Institute and has served on the staff of the Babson statistical organization as a research economist. Consequently, he takes up his new duties with a complete familiarity with the nature and scope of the organization's work.

"Upon leaving M.I.T. in 1906, Dr. Pulman became connected with the National Carbon Company with main offices



## 1906 Continued

in Cleveland and with nine factories scattered throughout the country. Here he worked as a research chemist, assistant director of the research laboratory, assistant superintendent of the Cleveland plant, and assistant to the general manager in the main office at Cleveland.

"In 1910 Dr. Pulman became interested in theories concerning business cycles and the workings of the law of action and reaction in the economic field. During the next 10 years he pursued his financial studies with increasing intensity. In 1920 he resigned his position with the National Carbon Company and enrolled as a student at Babson Institute." From this it is inferred that the Pulmans will take up their residence in or near Boston and the '06 crowd will be very glad to welcome them back.

It is with regret that we note the death of two of the classmates; namely, Howard C. Blake and Hermann C. Henrici. Perhaps more complete notices will be included in another part of The Review. The only information available is that Blake was killed in an auto collision on July 10. The following notice about Henrici was taken from the New York Times of June 1: "Hermann Charles Henrici, consulting engineer and active in Boy Scout and civic affairs, died yesterday of a heart ailment. He was 49 years old. A graduate of Manual Training High School, Mr. Henrici completed courses in mechanical and electrical engineering in the Massachusetts Institute of Technology in 1906. In 1907 he married Miss Lois Oldham. He was a former President of the Kansas City Council of Boy Scouts, the Rotary Club and the City Club, and a member of the Engineers Club, American Institute of Electrical Engineering, and the American Society of Heating and Ventilating Engineers." — J. W. KIDDER, *Secretary*, Room 1001, 50 Oliver Street, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

## 1907

As the result of a gracious invitation received from the committee of the Class of 1934, the Secretary attended the Class Day exercises of the graduating class at Walker Memorial on the afternoon of June 4, representing our class, and occupying a seat in a section reserved for the representatives of about 30 classes. On the way from Boston to Cambridge he met "Ike" Litchfield '85, who recalled with enthusiasm the many good times he had in former years with some of the men of '07. He particularly spoke of that first five-year reunion we had in 1912 at former Bursar Rand's farm at Bellingham, Mass., when we of '07 met him at the station with the old-fashioned buggy and tugging away at ropes, pulled him in state to receive the welcome of the bursar and his charming wife. We recalled that famous "badger fight" put on by "Stud" Leavell with Hosmer as the sympathetic and excited champion of the dog! You men who read this who were present on that day will laugh aloud at the memory, just as "Ike" and your secretary did on the street car.

Anthony B. Arnold, who is Vice-President of the American Agricultural Chemical Company and Bowker Chemical Company, now has his office at 50 Church Street, New York City. John G. Barry resigned as President of the College of Mines and Metallurgy at El Paso, Texas, last May and resumed his consulting practice as mining geologist and engineer with offices at 808 Mills Building, El Paso. In July he was named by General Hugh S. Johnson as special investigator for the copper industry. He will contact with both employers and employees and review conditions in the industry with regard to limitations of hours.

In a spring issue of The Review we told something of the professional work of James M. Gaylord. Since then we have learned that he has a wife and two children. The oldest, James Macdonald, is 24 years old and a graduate engineering student at the University of California at Berkeley, and his daughter, Elsie Rendall, is a sophomore at the University of Arizona, at Tucson.

Our tremendously energetic classmate, Carl Trauerman, writes that he took a trip by automobile with his wife and friends from his home city, Butte, Mont., to San Francisco, last June. It was a business trip, including visits to various mining camps in California and Nevada, and conferences with many mining experts in his capacity as a Montana director of the Gold Mining Association of America. While in San Francisco he had a visit with John Thomas of our class.

The 15th annual Boston Shoe Fair was held in Boston for three days beginning July 9. On July 10, Harold Wonsen, as President of the New England Shoe and Leather Association, was the principal speaker at a luncheon at Hotel Statler. — BRYANT NICHOLS, *Secretary*, 12 Newland Street, Auburndale, Mass. HAROLD S. WONSEN, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

## 1909

## Silver Anniversary

The following jottings by Paul Wiswall express in a few words the wonderful time we all had at our Twenty-Fifth Reunion at the Oyster Harbors Club, Osterville, Cape Cod, Mass., on June 22 to 24.

"The kindly weather man who stopped the drizzle as soon as we were all registered on Saturday morning. The devious ways and blind alleys on the way down to the Club. The discovery that the Club was on an island. The smell of the pines. The green of the grass everywhere and especially on the golf course. The faltering when you tried to call by name a classmate you had not seen for 25 years. The sunlight reflected from the water up through the trees to the front porch. The noise wherever Bill Kelly was. The cherubic countenances of Hardy Cook, Reg Jones, Bill Kelly, and Art Shaw; their sylphlike figures, their copious hair, and little, if any, gray. The perfectly swell bunch of children! The fatherly concern of Admiral Ridedale Ellis when a bevy of daughters embarked in his sailing skiff

for a voyage. The good things to eat with broiled lobster and filet mignon in the same meal. The stealing away of the poker players to Howdy Fisher's room Saturday night. The history of the class in movie film that Royce Gilbert is gradually making. The dating of the film made at Briarcliff in 1927 by the funny hats of the girls. The way Horace Ford fitted in on his arrival Sunday morning; his excellent talk to the class after dinner. The absence of such a regular at all class doings as Tom Desmond. The good news that he was making a good convalescence from an attack of pneumonia. The zest of Carl Gram in presiding. The skill of Charlie Main in having everything run like clockwork. The excellent movie director we have in Mrs. Gilbert. The clever operation of the Gilbert movie projector with Doris doing most of the work. The absence of crowing over golf scores. The gorgeous roses, larkspurs, and Canterbury bells from the Club garden. The question which is father and which son when Art Shaw and his boys play tennis. The inseparable Scharffs, Mollie and Samuel. The gracing of the party by Fred King's father and mother and by Phil Chase's wife's mother. The clear and concise talk by Reg Jones about the insurance plan for making a class gift to the Institute. The way the youngsters, by Sunday morning, had gravitated to their own table and had become pals for life. The sad news of Chet Pope and how he got his dates mixed and never got there at all; maybe his hole-in-one a few days before at Baltusrol confused him. The unusually good turnout, 98 in all! The evident enjoyment of everyone all the time we were there. The awarding of long-distance honors to Paul Lord, who came from Chihuahua, Mexico. The gales of laughter in the dining room at every meal. The way we rotated places in the dining-room and everyone sat with everyone else. The changes in weight and contour in 25 years; too embarrassing a subject for more particular notice."

The attendance justified the fondest hopes of the Reunion Committee. Fifty members of the Class, 25 wives, 17 children, and six guests made a total of 98 who enjoyed some part of the outing. Horace S. Ford, Treasurer of the Institute, was our guest, as a representative of the Corporation. — An interesting fact about the attendance this year was that the percentage of those coming from outside of New England was about the same as for those living in the New England States. Mr. and Mrs. Paul B. Lord came the longest distance from Santa Barbara, Chihuahua, Mexico.

New York was represented by Mr. and Mrs. Hardy Cook and Margery, Henry Colson, Jim and Mrs. Critchett, Risdale Ellis; Mr. and Mrs. George Gray and their two children (Jack and Katherine), Lewis Johnson, Reg Jones, Fred and Mrs. King (and Fred's father and mother who came over for Sunday), Bert and Mrs. Marshall, Mollie Scharff and Samuel (nearly as tall as his father), Max and Mrs. Weill, Harry Whitaker and Paul Wiswall (whose interest in the Class is

1909 Continued

an example to all of us). From Philadelphia came the Bill Kellys and Roberta, Mr. and Mrs. Phil Chase, and Mrs. Williamson, Mrs. Chase's mother. We can always count on "King" and May Bullens from Pottstown, Pa. George and Mrs. Wallis with their two daughters, Frances and Betty, were on from Chicago; and we were glad to see the Healys again and Eileen from Milwaukee. Canada was represented by Fred Faulkner from Halifax, where he is teaching in the Nova Scotia Technical College; and by Stevie (J. N.) Stephenson from Gardenvale, Province of Quebec. F. Gardiner Perry, Treasurer of the A.P.W. Paper Company, with Mrs. Perry, came from Albany, N. Y. We had expected to see Tom and Mrs. Desmond but he was prevented from attending by an attack of pneumonia from which he is now happily recovering. Bee Hutchinson and the Mrs. also planned to be with us, from Detroit, but business affairs of the Chrysler Motor Company, of which Bee is Treasurer, interfered at the last minute. Both D. G. and G. A. Haynes were with us; Delos from St. Louis, and George from Boston.

We missed Chet Dawes and his wife this year, but John Davis and his wife represented the family. From around Boston came also Brad Dewey, one of our members on the M.I.T. Corporation, Jim Finnie, Carl and Hazel Gram, Royce and Victoria Gilbert and their daughter Doris, Francis Loud, Professor and Mrs. Bill Jones and their two daughters (Eleanor and Barbara), Charlie and Rose Main, Ben Pepper and the Mrs., Henry Spencer, Art and Betty Shaw with their two boys (Richard, now a Junior at Tech, and Robert), John and Mrs. Willard, Ken May, Joe Parker, and Clarence Maynard drove down on Sunday with Larry Winchester. Mr. and Mrs. Charles Freed brought two guests. Bob and Mrs. Smith and Edith motored down from Winchendon, Chapman came over from New Bedford and Frank Lange from Springfield.

The other New England states were also represented: Horace and Mrs. Clark and dear little Joan drove down from Sanford, Maine; Howard Fisher and Bert Thornley from Pawtucket, R. I., and from Connecticut came George Emerson from Hartford, T. C. Merriman from Seymour, and John and Mrs. Nickerson and their two daughters, Eleanor and Barbara, from South Manchester.

Telegrams expressing regrets at their not being able to be with us were received from: Jack Moses, Chet Dawes, Chick Shaw, Bee Hutchinson, and Florence Luscomb. In addition to these, letters were received from S. F. Barnett and Chill Sharp from California, Lancey Sherman from Hawaii, John Mills and Bob Hulsizer from New York, Clint Kyle from Newtonville, Cy Young from New Bedford, Let King from Noroton, Conn., Benny Dow from Bound Brook, N. J., Clark Robinson from Cambridge, and Ira Wolfener from Peoria, Ill., all of whom for various reasons were prevented from being present. — Your Secretary's only regret is that personally he didn't

have more time to chat with each one at the Reunion, but he did manage to glean a few facts, however, in one way or another.

Hardy Cook's daughter, Margery, is a junior at the University of Vermont, one of his boys has already graduated from Cornell, and another enters Cornell this fall. George Gray is associated with the International Tel. & Tel. Corp. George Emerson is with the Travellers Insurance Company. S. F. Barnett is raising fruit in Holliston, Calif.

Chet Pope made a hole-in-one on the fourth hole at Baltusrol, N. J., on June 21 and on the same day record sales were made by Pope and Gray, Inc., manufacturers of fine printing and lithographic inks. Garnett Joslin was in Mexico at the time of the reunion. Ben Dow is with the Calco Chemical Company, Bound Brook, N. J. Let King is associated with Johns-Manville in the Housing Department. Chet Dawes read a paper "Encouragement of Initiative in the Engineering Student" at the meeting of the American Institute of Electrical Engineers at Hot Springs, Va., on June 25 and also had a speaking engagement at Cornell on June 22 and 23 which made it impossible for him to attend the reunion. He says this is the first one he has ever missed.

A postal card of the Moana Hotel and the beautiful Waikiki Beach was recently received from Lancey Sherman, who says that here he lives and bathes, having been in Honolulu since last Thanksgiving Day engaged in "Hawaiiana research, past and present". He expected to return to California in July. Sherman very much regretted his inability to attend the Class Reunion and says: "We'll have to wait and see you at the Golden Anniversary — then we can sit around in our wheel chairs and gossip about the Good Old Days".

John Mills is Director of Publication at Bell Telephone Laboratory, New York City.

The New York *Herald-Tribune*, under date of June 12, carried the following announcement: "Mr. and Mrs. Melville K. Weill, of New York and Mexico City, announce the engagement of their daughter, Miss Ruth Elizabeth Weill, to Mr. Robert J. Strauss, son of Mr. and Mrs. Jack Strauss, also of this city. Miss Weill is a graduate of Bradford Junior College and is now a student at the Froebel League. Mr. Strauss is a graduate of the Horace Mann School and Harvard University."

On June 14 Miss Jeanette Comins, daughter of Mr. and Mrs. Albert K. Comins of Winchester, and Mr. Richard A. Harlow, son of Mr. and Mrs. John B. Harlow of West Medford, were married at the home of the bride's parents. Jeanette is a graduate of the Walnut Hill school and Erskine School. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, General Foods Corporation, 250 Park Avenue, New York, N. Y. MAURICE R. SCHARFF, *Assistant Secretary*, Main and Company, 1 Wall Street, New York, N. Y.

## 1910

M. J. Turnbull writes: "Since I've been elected to expose my past to public view, the following is submitted: After graduation in 1910 (I was really 1909 but cerebro-spinal meningitis kept me out a year), I thought a straight engineering career was ahead of me. After doing some of it at the Rochester, N. Y., Burton Company, I went to J. G. Brill Company (cars and trucks), Philadelphia, as assistant to the assistant general manager. My work was directing what was then called efficiency work, but is now known as industrial engineering. After a year I once more got into mechanical engineering work when I opened up an office in Philadelphia as a consultant on machine shop practice and design of tools, machines, and fixtures. Then came the War, which took me into the Corps of Engineers in May, 1917. I didn't get overseas and all my soldiering, except a few months in training and then in turn training replacement engineer troops at Fort Humphreys, Va., was spent either in the office of Director General, Military Railways, Office Chief of Engineers, or in the field, mostly in the Middle West, on inspection of small (6 F-12 T) gasoline and steam locomotives. On account of completion of some contracts after the Armistice, I didn't get my discharge until June, 1919.

"Following this, I spent ten years as works manager at Geo. D. Whitcomb Company, Rochelle, Ill. This concern is the pioneer maker of gasoline engined locomotives, and during my time there we got into storage battery, trolley, and later diesel engined locomotives, with a marked increase in weight and, if you will pardon my modesty, a marked improvement in appearance, and a marked decrease in cost. It was interesting work in a small town in an agricultural community.

"In 1929 I came back to Hartford, my original home, and after almost a year of trying to work out some things I had had in mind, I accepted a job as superintendent of the Merion Machine Company, Hartford, Conn. We make overseas sewing machines (quite some change from locomotives, but just as interesting). This is a small, substantial, old business, founded in 1838. Sales go to all parts of the world, which fact made it possible for us to keep going on practically full time all during the depression. — "It is late now to announce it, but in September, 1932, I married Mrs. Etta Young Oliviere, a native of Holyoke, Mass. We live at 175 Brace Road, West Hartford, and should be glad to see any classmates who care to call."

Paul E. Thompson (Pete) writes from Middleboro, Mass.: "In response to your question, I am wondering what there is about my humdrum existence that would be interesting to the other members of the class. As you know, I went into the cranberry business immediately on leaving the Institute. While I am not making the amount of money that some of my classmates are, I have found in the busi-



1910 Continued

ness of raising cranberries a field for the use of much of the engineering knowledge which I acquired at the Institute.

"I have succeeded in living a very satisfactory sort of existence, as I consider living here in the country much more desirable than living in cities. I have succeeded in raising a family and giving them a pretty fair education before the depression hit us, and while we have not made any money during the depression, we have kept our heads above water, and hope that we are all set to make somewhat of a success as prosperity returns. My boy who was in the hospital, suffering from brain trouble brought on by the flu, passed away last March."

From Seattle, Wash., comes the following from L. G. Tyler: "I have your notice that information should be forthcoming for notes for The Review for the Class of 1910. I have not sent in material for some years, so the following may bring your records up to date. Your records may show that I was teaching at M.I.T. from 1923 to 1929, the latter part of which time I was Professor of Sanitary Engineering. I left Cambridge to come to the University of Washington as Dean of the College of Engineering in the fall of 1929, and still retain that position in spite of the various upheavals that this institution has come through. The depression struck us below the belt and President M. Lyle Spencer undertook to reorganize the University, reducing the number of colleges from 13 to four. I had the unique experience of being Dean of a College of Technology, including the former Colleges of Engineering, Mines, Forestry, and Pharmacy, with the Departments of Military and Naval Science. Pharmacy was looked upon by the administration as an application of chemistry and botany, and as chemical engineering was also applied chemistry, these two groups were thought to be sufficiently related to be included in the same college. Much water has gone under the bridge since this action was taken, and with the new Governor and a new Board of Regents, a new President has been appointed and the Colleges of Forestry and Pharmacy have been put back in their proper places, leaving mines and engineering together in our present College of Engineering. Financial conditions have improved somewhat here at the University, and while we have had a cut of from 25% to 40%, one-half of that cut has now been restored and conditions of stability seem to have returned.

"We have a live M.I.T. Club in Seattle and meet once or twice a year with some 20 to 40 present. Other 1910 men in Seattle at the present time include: M. P. Anderson, Leander A. Dow, Professor G. E. Goodspeed, and W. B. Hargraves.

"I think we have a pretty good school of engineering here. We have been sending a number of our graduates back to the Institute for graduate work, where they have carried themselves with appropriate dignity and honor.

"About a year and a half ago President Compton favored our Tech Club with a visit which pepped us up considerably.

We were all glad to have an opportunity of becoming acquainted with Dr. Compton and of talking over with him affairs back at the Institute. We are a long way from Cambridge and contacts such as this and a similar contact with Dr. Tryon, our jovial Dean Lobdell, and Mr. Killian are greatly enjoyed. Our club had a meeting the other evening at a local yacht club, and this helped to give some of the older men an opportunity to realize the changes that have taken place since they left the Institute. — The most important event in this whole period I failed to mention, which is that I was married to Miss Wil Pree of Brookline, June 3, 1924, while teaching at the Institute. If any of the M.I.T. '10 fellows drop through Seattle, we will be delighted to have them look us up."

Your Secretary called on Herb Cleverdon the other day to check up on a building and gleaned the information that his daughter, Elizabeth, is married to Stuart Dana Baird. — DUDLEY CLAPP, Secretary, 40 Water Street, East Cambridge, Mass.

## 1911

The Boston Evening Transcript carried the following announcement in late June: "Theodore B. Parker was today appointed State engineer for PWA projects in Massachusetts, succeeding Colonel Charles R. Gow. He has served as chief engineer examiner under Gow since the inception of the PWA program.

"Mr. Parker was graduated from the M.I.T. in 1911, is the father of two children, and lives at 115 Woodlawn Avenue, Wellesley. He was commander of the 26th engineers during the War and prior to entering the PWA service was for 11 years chief project engineer for Stone and Webster."

At the start of the summer it was our great delight to have Ted Parker, I, and his wife here at Douglas Hill Inn. We hoped that was a harbinger of many '11 men appearing this year, but alas no! We were honored by the presence of President Charlie Smith '00 of the Alumni Association and Mrs. Smith, and Professor Barrows and his wife, but no other classmates. — We are all proud to have our classmate, Ralph Walker, IV, named to the visiting committee for the Department of Architecture and Architectural Engineering.

The letters from classmates have reached a new low this summer — just one, a card from Livingston Ferris, VI, announcing his new business address as Bell Telephone Laboratories, Inc., 463 West Street, New York City. To offset this dearth of news, however, we learn the following from the Alumni Office: Stacy Bates, II, is now reached at P. O. Box Y, Ventura, Calif.; G. Arthur Brown, X, is back from Quebec and lives at 811 Monroe Street, Endicott, N. Y.; Bart Nealey, I, 3545-82nd Street, Jackson Heights, L. I., N. Y.; Ralph Pease, V, is back from New York City and now at 254 Corey Street, West Roxbury, Mass.; and Fat Perry, III, has forsaken Stoneham and is agent for International Correspondence Schools, P. O. Box 853, Lowell, Mass.

As you read these notes, if you haven't done it already, Write to Dennie! — ORVILLE B. DENISON, Secretary, Douglas Hill Inn, Douglas Hill, Maine. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford, Mass.

## 1912

Dr. James A. Tobey was a speaker at the Conference of State and Provincial Health Authorities of North America at Washington, D. C., on June 5. Dr. Tobey has also been appointed a member of the Executive Committee of the New York State Committee on Tuberculosis and Public Health. At the National Convention of the Reserve Officers' Association of the United States held at Memphis in May, Dr. Tobey was elected Vice-President for the Second Corps Area, which includes New York, New Jersey, and Delaware.

Howard Green is consultant of the PWA Division of Housing. He presented a survey in Cleveland with cold, hard figures showing that slum districts, despite their congestion, squalor, and low standards of living, cost a city more than twice as much as an average metropolitan area of equal population. He asserted that economies which could be effected would more than justify a rebuilding of the area as a slum-clearance project. He particularly pointed out that the largest savings would be in fire protection and police costs and added that the misery of the inhabitants should become less acute and the menace to the entire community, which any section of crime, vice, delinquency and disease is bound to be, should be greatly reduced, if not entirely eliminated.

How happy it makes a class Secretary when he gets a letter from a classmate, starting off like this one from William C. Bird, I: "I noticed your rather newsy report in the last Technology Review, and it reminded me that I should like to secure a list of addresses of the 1912 members." It certainly is gratifying to us to know that somebody reads these notes. Bill Bird adds that he is in New York nearly every week and hopes to attend one of our local class luncheons this fall. Bird is a Vice-President of the Pro-phy-lac-tic Brush Company with headquarters at Florence, Mass. We hope to have regular luncheons, here in New York, during the fall and winter months, and it is suggested that out-of-town classmates, planning to visit the Metropolis, drop a line to the Assistant Secretary for information as to proposed dates and places of meetings.

C. B. Vaughan, II, paid us a visit one warm August afternoon, to do a little researching in some McGraw-Hill publications, as well as to make a social call. — Alexander W. Yereance, I, is settled in Boston as Assistant Manager of the New England Branch, Mortgage Loan Department of the Prudential Insurance Company of America. He tells us that from his office window he can see the repair work being done on Rogers Building and that one of these days he is going to "make a pilgrimage to those



1912 Continued

sacred precincts" which he has not visited since that memorable night when we got the official letters from the faculty telling us our several fates in the matter of graduation.

From Dennie, ever-faithful friend, we received a clipping which he culled from a Boston paper telling of some interesting work of Captain Harold C. Mabbott, II, now a War Department gunnery expert. Mabbott had been sent to witness some tests of a pilotless target developed by Gar Wood, of speed boat fame. This device is a target built on a fast craft, which is gyroscopically controlled. It is said to keep on a true course, regardless of rough seas, and therefore offers an opportunity for gunnery practice at a target moving at approximately the speed of a destroyer. This, of course, has been formerly impracticable, with targets towed by tugs or other relatively slow craft.

Paul M. Tyler, III, Chief Engineer of the Rare Metals and Non-Metals Division, U. S. Bureau of Mines, appears in print as the author of a feature article in the August issue of *Engineering and Mining Journal*. The article is entitled "What Do the Figures Show as to Consumption of the Non-Metallic Minerals?" This article contains statistics and data on the volume of production, imports and exports, and appraises their significance in relation to intelligent industrial planning. — FREDERICK J. SHEPARD, JR., Secretary, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, Assistant Secretary, McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York, N. Y.

## 1914

Those attending our Twenty-Year Reunion need no notes to remind them of this pleasant event. The less fortunate ones of the class who were unable to attend have also learned of this happy event through those attending and through *The Fourteen Pointer*. The Review, however, presents a chronicle of the affairs of the Institute and its graduate classes. It, therefore, seems appropriate that some short review be placed here that the records may be complete.

In spite of the difficulties of the times and the fact that the reunion was held at a long distance from New York where there is now the greatest concentration of active classmates, the attendance exceeded any previous gathering of our class since graduation. It is also believed to be the largest attendance of any class holding an independent 20-year reunion. There were 77 *bona fide* '14 men present.

On Friday evening, June 8, the New York contingent gathered at the pier of the Fall River Line and proceeded to embark for a pleasant voyage into New England. At about the same time the Bostonians left by automobile and arrived at Oyster Harbors Club, in Osterville, on Cape Cod, in time to start the celebrating Friday evening. The real reunion, however, began on Saturday morning with the arrival of the New Yorkers.

The two days were spent with scheduled events, centering upon the Saturday evening banquet as the high spot of the reunion. At that time not only were there the many usual pleasantries but also considerable discussion, both formal and informal, regarding the part that the class might play in Technology affairs. There was a very general feeling that the class had set an example in the way of entertainment and that now, with the Twentieth Reunion, it might be possible to initiate or to assist in the carrying out of plans for stimulating the interest and help of alumni in the affairs of Technology. It is interesting to note that the Alumni Association is keenly alive to this very problem, and it may well be that we can either as a class or through individual service immediately render a real assistance to the Institute. Another very interesting outgrowth of the reunion was a plan under the able leadership of Charlie Fiske to gather the New Yorkers together once or more each winter that they may keep alive the friendships made at the Institute. All in all it was a splendid, pleasant, and constructive reunion.

Porter Adams, Acting President of Norwich University, was elected President of the University on August 25. Congratulations on this latest achievement. (Further reference to President Adams is made on page I.) — Chester A. Corney, who has been active in electrical engineering matters in New England, was in June elected Chairman of a consolidated group of the engineering societies known as The Engineering Societies of New England. This organization coordinates the affairs of fully a dozen affiliated organizations and represents the engineers of New England in general matters of public service. We are all proud to have a classmate occupy such a prominent, public-spirited position. — HAROLD B. RICHMOND, Secretary, 30 Swan Road, Winchester, Mass. CHARLES P. FISKE, Assistant Secretary, 1775 Broadway, New York, N. Y.

## 1915

This opening number for the new year is saddened by the news of the tragic death of Howard H. Wells, IV. He was killed in a motor accident on the night of June 24 when he drove his car into the rear end of a towed trailer on the Coast Highway outside of Los Angeles. He was socially prominent and widely known out there and had established himself as a successful architect. He leaves his widow and two children, Howard Hawley, Jr., and Margaret. I have expressed the feelings and sympathies of our Class to Mrs. Wells.

To Ray Stringfield, X, and Kenneth Kahn, X, we are indebted for the above notice. Ray also sent a newspaper item of Palmer Sabin's, IV, achievements in prize winning designs in the latest Los Angeles building boom. This letter from Stringfield is full of interesting information. Unfortunately, on the day I received his letter Dr. William H. Walker was killed in a motor accident

on the Newburyport Turnpike outside Boston. He was Head of Course X during our time and a great leader. The Institute and Science generally will miss him.

The letter follows: "We have been spending a quiet fourth (of July) here at home, and just read the sad news in *The Review* which came yesterday of Reg Pollard's death. He was sure a good scout. My last memory of him is a very pleasant one of a visit he paid Ray Walcott and me some years ago just before I left Akron.

"You may have heard by now of the loss to the class and to our group here of Howard Wells, but will enclose the clipping from the *Los Angeles Times* of June 25 which is self-explanatory. The funeral was June 28 from St. John's Episcopal Church. Howard had been the architect for residences in Southern California for many prominent people, including Al Jolson and other movie stars.

"There are over 20 of our class in this territory, but to tell the truth, we haven't been getting together very often. I am enclosing a clipping which is now nearly a year old of a home Palmer Sabin built at Emerald Bay. Saw Dave Hughes, John Gallagher, Ken Kahn, and Bob Haylett a month or so ago when Professor Smith, of the Aeronautical Department at the Institute, was out. We all average about 50 pounds apiece more than we did 20 years ago. Not enough time for golf these days, and too fat to play tennis.

"The University of Southern California grows a few things beside football and track stars, and a few years ago, just to keep an eye on them, organized an Advisory Committee for the College of Engineering, consisting of seven members, on which I was the chemical engineering representative. Was in very good company, which included the President of the Southern California Gas Company, the President of the Los Angeles Gas and Electric Company, the general manager of Los Angeles Harbor, the field superintendent of the Union Oil Company, and others. About two years ago, Dr. W. W. Scott, who was head of the Chemical Department, died suddenly, and the administration talked me into taking over the course in industrial chemistry which he had been giving. (If Thorp could only see me now.) Figuring that Bob Haylett was a good executive so that his job as Director of Manufacturing of the Union Oil Company didn't keep him busy, I slid him into my place on the Advisory Committee, so maybe it is his fault that U.S.C. didn't win the football championship last fall.

"While I don't spend very much of my time at the university, I enjoy the contacts there, and with Dr. William H. Walker and Bob taking considerable interest in it, we may build up a real chemical engineering department some day, the which there is really a good field for here. While I don't believe much in specialized courses, they have me talked into giving two during the coming

1915 Continued

year; one, the first semester, in rubber technology, and one, the second semester, in synthetic resins, both of which will be timed so that the local industrial chemists can get them in.

"What really keeps us busy, however, is trying to be Secretary and Manager of the Dental Plastics Company, a small outfit we started a couple of years ago to manufacture a line of dental specialties. So far we have one in international distribution, four more in national distribution, and a couple more on the Pacific Coast only. We are playing in the field of synthetic resins and metallic soap gels, and if there is any field that has less real information available, I don't know it. Give us time and we may know something about it, and in the meantime, it is certainly highly interesting, enough so to make me slide out of the Bakelite molding business I started shortly after leaving Goodyear, so I could devote most of my time to this.

"I am writing this at home, so excuse the Corona; my secretary could do a better job. Have had to give talks to a half dozen organizations lately on synthetic resins, so have been keeping this machine in practice. Still have only one wife and three children, in spite of proximity to Hollywood. Wife is President of a Junior High School P.T.A. so only get to see her once in a while. Haven't been back to Boston since 1915, and sure would like to get back next year, but will have to see how busy the dentists get. — Best regards to yourself and any of the rest of the boys who may remember me. I still have scars on my hand from the Hallowe'en night that Casselman, Bidwell, Mason, and I tried to blow up Musician's Hall on St. Botolph Street."

Fortune smiles on us this month with a letter from Bob Haylett, X, who has been out of contact with us for many years. Thanks a lot, Bob, it's a pleasure to hear from you and to know you've been so successful.

"Your letter of March 9 deserves a prompt reply. I was very glad to hear from you, and I surely appreciate your efforts to gather news regarding members of the class. I have been connected with the Union Oil Company of California ever since I left the Institute in January, 1916. My present job is that of director of manufacturing which involves supervision over the refining, gas, research, development and patent activities of the company. My headquarters are at the Union Oil Building, Los Angeles; and I shall be very glad to see any members of the class who are out my way. It has been a long time since I have seen any of the boys with the exception of Raymond Stringfield, who is here in Los Angeles also. Dr. Walker, Stringfield, and I have been serving for some years on the advisory committee for chemical engineering of the University of Southern California; and as you might suspect, our recommendations have been largely influenced by our Tech experience.

"I spent a day in Cambridge last February with Professor McAdams and fully intended to look you up, but un-

fortunately I had to return to New York sooner than expected and lost the opportunity. I shall try to do better next time I am in the East. — With my kindest regards and best wishes to all the class."

Jim Tobey is always a reliable trusty and he sends in this report on the 1915 attendance, April 5, at the Technology Club of New York meeting: "James A. Tobey, XI, Director of Health Service, Borden Company, New York City, two children — boy, 14, girl, 9. S. L. Willis, market and industrial consultant, Technology Club of New York — three children, girl, 16, boy, 15, girl, 12. Howard L. King, Mason and Hanger Company, 500 Fifth Avenue, New York — one girl, 11. Kebe Toabe, Elizabeth Plate Glass Company, 1085 East Grand Street, Elizabeth, N. J. — boy, 14, boy, 10. Ernest M. Loveland, superintendent, George LaMonte and Son, Nutley, N. J. — boy, 13, girl, 6."

Every one will rejoice at Jack Dalton's good fortune. Newspaper clippings and photos supplemented the following formal announcement: "The Board of Directors of the Boston Manufacturers Mutual Fire Insurance Company announce the election of Marshall B. Dalton as President." Following his graduation from Course I, Jack became associated with the Liberty Mutual Insurance Company of Boston, serving successively as safety engineer and factory inspector, district supervising engineer, branch manager, district manager for New England, and for the past four years as Vice-President of the company. Best wishes and success to Jack in his new job. It's a big one, but I'm sure he can handle it successfully.

No one who entered as a freshman with our class can forget Professor Joseph W. Phelan, who gave us inorganic chemistry. And everyone, I know, will be sad to learn of his death early last summer at his home in Medford, Mass. There was a kind and human teacher, who understood us as youngsters and helped us sympathetically. He stands out in contrast to some instructors who lorded it over us and in their intellectual superiority removed themselves aloofly from us. Through this very kindness, he became known fondly by the name of "Beaker Joe." The Institute will go a long way to replace him. He will live in our memories dearly and I am sorry for future students who cannot boast of his friendship.

At a time when most of you married chaps have children almost ready for college and consider that babies' cries have given way to requests to use the family car, Baldy Joe Phelan, VII, comes forth with his first baby. Read and marvel:

"You may be interested in knowing that Hope Kohler Phelan was born to Mrs. Phelan on April 4, 1934, in the Baker Memorial. Father and child are doing well. Also and incidentally, Mrs. Phelan is now feeling great again and the entire family is now assembled at home, where we hope you will pay us a visit

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in the near future. We have planned getting together before, you know, but the reason for our failure is now obvious. We'll try to arrange to have you sit down to a bite with us some evening and allow you the rare privilege of gazing upon the sublime countenance of Baby Hope. (They say she resembles me!)

"Am still with the Hood Company (19 years!) and still get a kick out of the work. I have the pleasure of entertaining the Course VII group each year on an inspection of the plant and thus keep some contact. Wally Pike drops in occasionally and Bob Parsons crosses my trail in town once in a while."

I went, I saw, I ate! Suffice it to say, I shall gladly do it all over again. These engineers, especially '15 men, can pick the most charming wives, who are always swell cooks and they (together) have charming babies.

I hope these copious notes will stir you all to reward your Secretary with a prompt and careful response to the request for class dues which goes out at this time. It's two years since you have been called on, so surely the \$2.00 should be no hardship. Our Twentieth Reunion approaches. Let your class spirit shine forth that we may have a full treasury. — AZEL W. MACK, *Secretary*, 72 Charles Street, Malden, Mass.

### 1917

Larry Gardner dropped in early in the summer to report his happy connection with the Detroit Graphite Company as their representative over much of the New England territory, dealing with large consumers of the various paint products made by his company. He reported having seen Tom Hanna in Nashua, where he is working in the dyeing department of the Nashua Manufacturing Company, manufacturers of Nashua blankets. He also reported contact with Jim Wallis who is now back in this country after his long and successful stay in Berlin for the U. S. Department of Commerce. Joseph Garvin of the Erb-Garvin-Wallis triumvirate is now with the Adams Distilling Company of Cambridge, Mass., and presumably will be glad to see thirsty visitors. Larry's last bit of news was that K. E. Bell had recently given a talk to chemical engineering students at the Institute. — Early last May, there was a large regional meeting of the American Chemical Society at Kansas City, Miss., and one of the two principal addresses was given by Paul Gardner, director, William R. Nelson Gallery of Art and Atkins Museum of Fine Arts. His subject was "Chemical Sidelights on Art."

Some 20 of the faithful gathered at the Corinthian Yacht Club Saturday afternoon and evening, June 16, for no purpose at all and left in the evening or later, fully satisfied that the objective of the gathering had been accomplished and quite desirous of taking part in another as soon as a proper time interval had elapsed. The highlight of the meeting was the announcement that Horace Ford had been made Treasurer of



1917 Continued

M.I.T. The Class has had the privilege of including Treasurer Ford as an honorary member since he joined the Institute staff and has had the pleasure and benefit of his company on sundry reunion occasions. An official resolution of congratulation on his new responsibility was made and forwarded to Treasurer Ford.

Leon McGrady came down from Rochester heavily loaded with photographs of the new addition to the McGrady family. The amount of film and print material used would account for a big discrepancy between production and sales records of the Eastman Kodak Company. Mr. McGrady made an able presentation of the advantages of a proposed reunion at Saybrook, Conn., in the early fall, speaking on behalf of a group of New York play boys who have underwritten the event. It seems apparent that whether or not there are funds in Boston for the necessary car-fares, food, lodging, and games with Louis Wyman, there will be a sufficient number at Saybrook to insure the success that has marked so many 1917 meetings.

Ted Bernard read regrets from several honored members and associates who had been notified of the affair. Rad Senter agrees to come when he strikes oil; Penn Brooks, assistant to the President of the U. S. Steel Corporation, will come as soon as he has the corporation up to production capacity. Dr. Allan Winter Rowe's letter was a bit beyond the ability of the reader at the time and so those interested must write him for copies if they wish the document's full beauty of thought and expression. — With Dud Bell and Phil Hunt both absent, the gathering was marked by decorum unusual even in a Class of such known seriousness of endeavor.

As a postscript, it may be added that notices were sent to members of the class in the immediate vicinity of Boston who had shown an interest in previous gatherings and a few outside who had at times come long distances for them. It was disclosed during the meeting that H. P. Gardner's (better known as Larry) telephone number is Center Newton 1917.

Louis Wyman acted as principal host, celebrating his having drawn a horse in the sweepstakes. According to those claiming to be informed of the details of this transaction the horse died on the way to the race but nevertheless Louis was duly awarded a very interesting amount of cash.

The News Edition of *Industrial and Engineering Chemistry* for June 20 carried the following item: "Walter G. Whitman, associate director of research of the Standard Oil Company (Indiana), has been appointed Head of the Department of Chemical Engineering at the M.I.T. Professor Whitman succeeds the late William P. Ryan, who died in June, 1933. Since that time Warren K. Lewis has directed the affairs of the department as acting head. Mr. Whitman's outstanding scientific contributions have been in

the fields of corrosion and the absorption of gases by liquids. In both of these fields, he was the first to appreciate the extent to which the results are controlled by processes of diffusion. Professor Whitman received his B. S. master's degrees from M.I.T. and served as an assistant in the Department of Chemical Engineering there for one year and as an instructor for two. He was then appointed assistant professor and director of the Bangor station of the School of Chemical Engineering Practice when it was established in 1920. In 1921 he became director of Technology's Boston station of the practice school, and a year later he was appointed assistant director of the research laboratory of applied chemistry. Professor Whitman joined the staff of the Standard Oil Company (Indiana) in 1926, and soon after was appointed assistant director of research and later associate director. He is chairman of the Division of Industrial and Engineering Chemistry of the American Chemical Society and a member of the American Institute of Chemical Engineers and the American Petroleum Institute."

During the summer, extended correspondence was carried on between the custodian of the long-distance cup and Mr. E. D. Sewall, expert in the production of valuable trophies. As a result, a beautiful sterling silver cup was designed, sculptured, engraved, and forwarded to Mr. Chambers Mehaffey at Washington, D. C. It is hoped that a similar cup may be offered in the future to winners in the long distance reunion trip competition. The trophy is an exact replica of the famous Dunning distance cup, differing only in color, size, shape, weight, metal, plate, and engraving.

The *Boston Globe* has the following to say: "Major John C. Platt, Jr., for the last six years junior signal officer in the 1st Army Corp area, will go June 2 to Fort Sam Houston, Texas, whither he has been transferred as divisional signal officer. Directly after his graduation from M.I.T., he received a commission in the Regular Army. During the World War he served at Fort Lewis, Washington, in the 44th Infantry, 13th Division. Prior to coming to Boston, he was at the Signal School at Fort Monmouth, N. J. Major Platt will be accompanied in June to his new post in Texas by his bride, who was Miss Vivian H. Marr of Newburyport, a graduate of Simmons College."

Once again your Secretary bewails the anti-illustration regulation of the editor of *The Review*. Certainly the beaming face of Charles Dix Proctor with a tall silk hat over clean new spats, snapped by our news photographer as he headed toward the Little Church Around the Corner on June 2, would be a high light worthy of any magazine published. We hope that the now Mrs. Proctor was sufficiently aware of Mr. Charles Dix's numerous attractions and qualifications to be equally pleased with the prospect. She was then Miss Violet Georgene Weber. Some weeks later, Dix wrote a

more or less coherent note indicating that he had been in Bermuda, Nassau, and other remote corners of the world and that he had returned to continue his campaign for a fall reunion somewhere along the Connecticut shore. Incidentally, he admitted that the four ushers at the big event, all good Tech men — R. J. Marlow, T. S. Killion, F. L. Warner, and R. Maser — did not arrive in time to usher because of traffic difficulties resulting from the grand Navy parade. The fleet was in but fortunately only the ushers were delayed. Walter Winchell is reported to have indicated Bob Marlow as the next victim. — A. P. Sullivan of the Doherty Research Company, Long Island City, one of the Cities Service Group, paid us a visit in Boston recently and reported that all his tropical fish were doing well.

A recent edition of the *Sunday News*, had this to say about Clark Robinson: "Clark Robinson and Cleon Throckmorton, noted stage designers, were scheduled to speak before an electrical society on stage lighting — Throckmorton to talk about lighting in small theatres and Robinson to tell about the game in the big houses. Throckmorton got up and said: 'It doesn't make much difference whether the stage is large or small, or what the set is. All you have to do is put on a lot of blue light and they'll applaud it anyway.' Oddly enough, Robinson says, this is true. People come to the theatre all ready to be hypnotized, and one can do anything to the human mind with color. Blue, Robinson thinks, gives a sense of space. The only time he has seen true blue was when, as a wartime aviator, he was about four miles up trying for an altitude record. Yellow and amber stimulate laughter. Brown and red induce fear. Green brings a sense of repose. Yellow and magenta produce a definite illness in sensitive persons, and he never uses these colors in combination on a stage. Clark Robinson, young-looking, yet with graying hair, slim, studious, and courteous, had his first Paramount Theatre stage show produced on Friday. The Paramount completes his cycle. He has now been art director in every big theatre in New York except the old Hippodrome, and the Hip passed out of the picture as a house of spectacles before Robinson got into the game." — RAYMOND STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

## 1918

Now that most of us are at least half full of years, it is seldom that these columns record a wedding which thus brings to a close an unusually long bachelorhood. It is, therefore, a disturbingly happy privilege for us to acknowledge receipt of the announcement of the marriage on June 8 of Fay Betty Gould to Nathaniel Krass. Following the ceremony in New York, the bride and groom sailed for a two months' honeymoon in Europe, where we trust they found incommunicably delightful experiences, varying from glittering nobles, silk-hatted and re-



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splendent, to peaceful cattle grazing unimaginatively hard by the ruins of old castle walls.

Al Murray writes from the offices of the Philco Radio and Television Corporation, Philadelphia, where he has been for the past year and a half in charge of television development. Our own agile imagination leaps the conquering years back to the squeaky, disquieting crystal set we first listened to in 1923 and then grasshoppers to the marvelous instrument we bought in 1933 — all as a preparation for hurtling forward into the unknown from the experience which wrecked our aplomb at the Century of Progress when we saw our own small boy moving on the television screen like a blighted newspaper half tone, though the voice had that clear, vibrant quality which made his identification so positive.

Al lives in Haddonfield, N. J., and, still being a bachelor, craves the companionship of any other '18 men who may reside in the community. Philadelphians, please note. Bunny Pinkham, are you still there? — Our Gretchen has been South for the summer, and she postcarded us from Houston, Texas, that she was bubbling with news which would presently be available.

From Merideth Parker comes a letter freighted with ambitions which postpone one's sense of the world coming to an end. The letter head is that of the Industrial Research Laboratory, New Brunswick, N. J.: "On June 30, I completed ten years of service at Rutgers University, which followed five years in the Western Electric Company's research laboratories in New York City. You will recall that I forgot to graduate at M.I.T. but got married instead, and I believe that my daughter is the oldest child of any member of the Class of 1918. Judging by our frequent predicaments, she is both popular and pretty, and I expect she will graduate from high school this year. In regard to my newly started business, I can report neither failure nor outstanding success, but I will write you within the next month about my advances, at which time the printer will have completed the pamphlet now in his hands.

"I tried to reach M.I.T. at commencement time but when I did arrive, McAdams and others of my friends were on vacations. I am interested in connecting with a chemical engineer and probably an organic chemist, who would have vision and dependability so I could be free to carry on the industrial relations incident to developing the business. Yet these men should recognize that something more might be expected of them than punching the clock daily and drawing a weekly salary during the formulative period of a new business heading out of the depression. — I still have my mementos of Tech and while I finished up at Rutgers, I feel loyal to the Institute. If you can inform me as to the whereabouts of Speed McQuaid, XIV, '17, I would greatly appreciate the same." The Alumni Office gives Howard S. McQuaid's latest address as: Grasselli Chemical Company, Cleveland, Ohio.

Johnson had his Boswell, Mr. Dooley his Hennessey, and any Secretary of the Class of 1918 will have his inimitable Mal Eales who can always be counted on to relieve the tedium of barren notes with a music familiar, dear, and rippling with guffaws. Here he comes with the usual grave hilarity: "Have the new officers of the crowd down here flooded you with press releases of 1918 gossip? Pete Har-rall has built a new house in Tenaflly and is quite tickled with it. Ed Little has a new Buick. Eaton Clogher stopped in to see me recently and had lunch. He is married, has two children, has acquired an interest in a trip rock concern in New Haven, and is the same old jovial gent he always was when exposed to Course VI. Milt Loucks was down from Gloversville, where he has a glove factory and tells me he travels all over the eastern part of the country chasing the elusive business. As a part of a recent reorganization in the Bell System, Jack Kennard and Bill Costello have moved to the Bell Telephone Laboratories at 463 West Street so I expect I'll see them about as often as I see you. That will make about a half a dozen 1918 men up there, including John Emerson Cassidy (the Barrister), Charlie Gray, and the pride of Tremont Temple, Clarence Hershel Dagnall. Sid Judson has recently changed his connection and is now with Phelps and McKee at 120 Broadway still selling stocks and bonds.

"Walt Robertson and old poker-face Fuller tried to cook up a day's outing last month at a country club here in Jersey. A canvass of the boys beforehand to see how many could come resulted in the greatest bunch of alibis you ever heard. I think the next one they plan on, probably in the fall, will get better results if they canvass the wives instead. If not, the boys deserve a foul, if constructive, suggestion as to where they can go."

In May our office door neatly framed the ample figure of Bob Van Kirk, who gave us an account of his attempts to pry open the enormous oyster of this world. To our academic ears, his most pregnant remark was: "Confiscation of opportunity is, to the young man, as serious as confiscation of property to the old man. The NRA says you can't start a new business without the consent of the code authority which is controlled by big business — and I say it's confiscation of opportunity." — F. ALEXANDER MAGOUN, *Secretary*, Room 4-136, M.I.T., Cambridge, Mass. GRETCHEN PALMER, *Assistant Secretary*, The Thomas School, Wilson Road, Rowayton, Conn.

## 1921

A brand new volume of The Review brings our greetings and best wishes to all as we resume our regular meetings for another season. Ray joins your Assistant Secretary in wishing you health, happiness, and success in large measures. Our sincerest thanks for your aid in the form of news, which makes this column possible, and more thanks in anticipation of all the letters that we hope you will continue to send in during the coming year.

## THE TECHNOLOGY REVIEW

Our bachelor's quarters are fast dwindling to hardly more than a thin dime. This time it's Genial Josh, one of the few to include the "not married" specification in the Class Book history at our tenth reunion. Witness the following announcement: Mrs. Bob Ell Graves announces the marriage of her daughter, Minnie Claude, to Mr. Josiah Denton Crosby on July 14, 1934, in New York City. Josh continues as Technical Supervisor at the Hood Rubber Company, Inc., Watertown. Our newest newlyweds are at home at 27 Noble Street, West Newton. Here's how, and Max Burckett says the extra loud "how" is his!

We are indebted to some kind alumnus, who remains anonymous, for sending us a page from the Honolulu *Star-Bulletin* of July 17 last, containing editorial comment on new honors accorded to one of our Course X members. Under the heading of "China Elevates its Consul," the item reads: "In the presence of Sun Fo, high official of the Nanking government, King Chau Mui assumed office on Sunday as the first Chinese consul general in Hawaii. Mr. Mui, who has served as consul here since 1931, was promoted to his present post on June 18. His elevation is a tribute to his ability, tact, and devotion. During his three years in office in Hawaii he has proved himself a capable representative of his government. Charming in personality, able, alert, a good speaker both in his native tongue and in English, he is a credit to his office and his government. Diplomatic and consular representatives of his caliber are a credit to any government. His friends in the islands are numerous. He enjoys the esteem of not only his own countrymen here but of people of other races. Hawaii congratulates him in his new post." Likewise, congratulations from all of us.

Professor C. E. Locke kindly reports further on H. E. (Rolling Stone) McKinstry. Hugh is located in Melbourne, Australia, following a trip to South Africa. He is associated in an advisory capacity with the Western Mining Corporation and Gold Mines of Australia and is a member of the Board of Directors of the recently organized Bendigo Mines, Limited. How about that story of your travels for these columns, Hugh?

A letter, a card, a clipping, — what have you? Will trade little used blue pencil! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, South Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, 10 University Avenue, Chatham, N. J.

## 1923

Pete Pennypacker reports that the New York Club of 1923 held a picnic at Echo Lake in Northern New Jersey during July. The big pile of notes ahead this month prevents my including Pete's complete account of the affair, but Jack Keck managed the supper and Chan Clapp put on a treasure hunt which was enjoyed by the men and their wives present. The New York Club is planning some sort of fall gathering which will be reported on later. Pete says he is just

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back from a two weeks' vacation at Braemar, Nova Scotia, the water sports and fishing of which he says he can recommend.

Fred Bastian, II, writes: "I am in Newark, N. Y., with the Empire Gas and Electric Company as a heating engineer in their Gas House Heating Department, which has just been organized. Last year I worked in Rochester with the Surface Combustion Company and picked up considerable experience in the sales and installation of house heating equipment. Hustle has to be my middle name as, besides my wife, I have a daughter and two sons to take care of." — Bartlett Cocke, IV, is in private practice as an architect in San Antonio, Texas. He adds: "And business aint so bad — right now," for which hopeful report we thank him.

According to the Boston *Herald*, Harold Crowley, XV, the noted Winthrop aviator, was married in New York in June to Mrs. Violet Scott of New York, to whom he had been giving flying instruction for several months. — Manny Delugach, VI, reports that he is married and has three children, two boys and a girl. After graduation he built a number of homes in Memphis, Tenn. Since 1933 he has been Vice-President of Mid-South Shoes, Inc., wholesale shoe dealers of that city. — L. S. Hayes, XII, reports that after leaving the Argentine a few years ago he went to Peru and joined the staff of the Cerro de Pasco Corporation at Morococha, and has considered himself fortunate to have been employed all through the depression.

Harry Kalker, I, writes: "I am going to leave out the usual apologies for not writing. You caught me on what I hope to be my last move. After two years of civil engineering I fortunately left this field and went into radio, becoming a manufacturer's agent in New York City. I supplied such parts as condensers, transformers, and resistors to radio set manufacturers. All profits (and there were some) were invested (so they told me in 1929), speculated thereafter, and lost after that. In 1930 I salvaged enough to pay my carfare to Philadelphia where I became Sales Manager of the International Resistance Company. During 1930-31-32 and the middle of 1933 I knocked so hard and so loud on wood that neither I nor International could hear the depression and we fared well. In the middle of 1933 I resigned and moved to North Adams, Mass., to form my own company, Sprague Products Company, and here I am. I have taken over the jobbers' sales of the Sprague Specialties Company, who manufacture fixed condensers. A goodly portion of our engineers are M.I.T. men. You just fall over them here. I know that some of the boys will probably read the above with a smile, because I vowed when I was at M.I.T. that I would have nothing to do with capacitors, resistors, ohms, volts, and what not — and here I am talking nothing else but. My home address is Williamstown, and if any of the old gang are heading this way there is a whiskey sour waiting for them with a big welcome."

Dave Kaufman, X-B, is to be married in September, according to the New York *Herald-Tribune*, to Miss Rose Lepes of Fall River. — I have seen considerable of Abe Kenney, I, during recent months and recently had a chance to meet his family. There is a boy, Albert, Jr., five years old, and a newcomer, born in February of this year. Abe is in charge of the Boston office of the Chicago Bridge and Iron Works and lives in Wellesley. — Major C. Kittrell, I, is at a new station as Chief of Operations of a project employing 5,000 men at Fort Peck, Mont. He is with the Corps of Engineers.

Bernard Lewis, X-B, was married in May to Miss Eunice Norton, internationally famous pianist, in New York. He is research physical chemist with the Bureau of Mines Experiment Station in Pittsburgh, where he reports being engaged in studying the fundamentals of gaseous explosions. — Howard Millet is located in Augusta, Maine, representing the Educational Department of Houghton Mifflin Company, publishers. — Charles R. Myers, X-B, is President of his own firm of realtors in Camden, N. J.

Professor E. R. Schwarz, II, of the Institute's Textile Department spoke in May before the meeting of the United States Institute for Textile Research, in New York. — Louis H. Skidmore, IV, has been for five years assistant to the general manager of the Chicago World's Fair and in charge of the Architectural Department. On January 28, 1934, he became the father of an eight-pound son, Louis Hiram, Jr.

Ping Yuan Tang, XV, writes: "I am still working as Managing Director of Ching Foong Cotton Mills in Wusih, an industrial city in China about 90 miles from Shanghai. In 1931 I made a thorough study of the cotton industry's conditions in Japan and England (I miss America) and after that a sister cotton mill by the name of Ching Foong No. 2 was built and successfully put into operation in 1933. This mill has a modern bleaching, dyeing and finishing plant besides cotton spinning and weaving. In order to rationalize the Chinese cotton industry, the National Economic Council in 1933 created a Cotton Industry Commission which undertakes to improve the Chinese cotton plantation and advance the textile industry through the creation of a Research Institute. I was appointed from the very beginning to sit on the standing committee of five of the Cotton Industry Commission. My family is growing bigger with three sons and two daughters. I hope one of the boys will study at Technology later on."

Another '23 man in an important position and a long way from Technology is E. B. Ledesma, II, who reports that he was appointed Manager of the Southern Division of the Philippine Long Distance Telephone Company. This company covers all the provinces south of Manila, but Ledesma says they are now operating only three of the larger provinces.

I got the following circumstantial account of himself from Chaplin Tyler, X: "June, 1923, to November, 1924, re-

search associate in Applied Chemistry at M.I.T. December, 1924, to August, 1927, Assistant Editor, *Chemical and Metallurgical Engineering*, McGraw-Hill Publishing Company, New York. Also Associate in Journalism, Columbia University, 1926-1927. September, 1927, to date, E. I. du Pont de Nemours & Company, Ammonia Department, Wilmington, Del. Successively research chemist, chemical engineer, research supervisor, in charge personnel procurement and technical investigator (these are not formal titles). At present am Sales Development Manager of the Ammonia Department. Our business is the manufacture of synthetic ammonia, fertilizer nitrogen products, synthetic alcohols, antifreeze, and a variety of pressure synthetic catalytic products. We have an investment of around 20 million dollars, all since 1926. June, 1925, married Harriet A. Scott of Medford, Radcliffe '22, and have two children, Joan, 8, and Richard, 5. I guess my only hobby is writing technical articles, of which there are too many already under my name. Nitrogen is the subject of most of them, though for a consideration, I'll tackle anything." — HORATIO L. BOND, Secretary, 195 Elm Street, Braintree, Mass. JAMES A. PENNYPACKER, Assistant Secretary, Room 661, 11 Broadway, New York, N. Y.

## 1925

## COURSE III AND XII

An apology is due G. W. Noble for the failure of the course Secretary to mention that he received his master's degree in mining engineering (petroleum production) last June. After being in close touch with his work for the entire year, I have no excuses whatever to offer for neglecting to include this in the July notes.

Professor Locke passed a newsy letter on to me from J. L. Maury. In January, 1933, he went to work for the Grigsby-Grunow Company in Chicago, working on budgetary control and developing controls for manufacturing processes. Later he went with a firm of Boston industrial engineers, MacDonald Brothers, on management audit. There he made surveys of maintenance, time-keeping, cost accounting, employment, and so on. In May, 1934, he became superintendent of manufacturing in the radio division of the Stewart-Warner Company and sees plenty of work for himself in the coming year with problems of organization. Maury reports that he now has three children, two girls age four and one boy two years old.

It is certainly a pleasure to announce that I. M. Symonds will be at M.I.T. beginning this September. He has been appointed instructor in mining engineering and in addition to his Institute duties plans to carry on graduate work and research. Sy has for the last three years been employed with the Philadelphia and Reading Coal and Iron Company at Pottsville, Pa., first on coal preparation work and more recently on the planning of long-term development programs. He paid me a visit at summer camp in August



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and reported having lunched with Herb Taylor who was visiting some of the anthracite preparation plants a few months ago.

Your Secretary has little to report regarding his own activities. A large portion of the summer was spent at the Mining Camp in Dover, N. J. Previous to that he made a short motor trip through Maine and Quebec and stopped off at Thetford Mines, Quebec, long enough to visit the King Mine of the Asbestos Corporation, Ltd., and inspect the underground workings where the mining is carried on by a block caving system similar in many details to that employed by the Miami Copper Company in Arizona. — F. L. FOSTER, *Secretary*, Room 6-202, M.I.T., Cambridge, Mass.

## 1926

While we are still grouped, perhaps invidiously, as one of the younger classes, the fact remains that we are alumni of nearly ten years standing and that most of us can claim only callowed memories of our tender twenties. These lugubrious reflections were prompted by a count we just made which indicates that this is the 70th canto of this Algerian chronicle covering the exploits of the '26 do-or-die boys, who nearly always do. It is questionable whether the secretariat, against advancing years, can continue his bromidic contributions for another 70, or even 10, months or, more important, whether the class can longer abide them. There is a moral and a subtle hint implicit in all this.

On May 26 Miss Eunice Glenn was married to Harry M. (Spark Plug) Boardman and they are at home at 248 South Piper Street, Detroit. — On June 30 Miss Julia Troy of Dorchester was married to Chester Buckley. They reside at 199 County Street, Taunton, where Buckley is manager of the Municipal Lighting plant. — On July 7 Nelson B. Haskell was married to Jane C. Perkins of Lockport, Ill., where they now live at 519 East Third Street. — Mr. and Mrs. Juan Emile Chaudruc announced the birth of a son, June 30, named Denis Royer.

Dave Shepard has gone expatriot and taken up residence in Paris. His address is 82 Champs Elysées. — Bradford P. Young, whose gifts as a chorine in Tech Show will be recalled, gives an address of New Castle, Pa., care of Bell Telephone Company of Pennsylvania. — Richard Plummer, whose preparatory school was Dartmouth, is with the du Pont Company at Wilmington, Del. — Several members of the class have entered the clergy. One of them, Rev. Carl H. Olson, is following his calling in Cincinnati. — The class's mandolin-playing mandarin, Raymond Mancha, now lives at 404 Lee Street, Evanston, Ill. — One of our more accomplished golfers, John P. Larkin, called at the office this summer and revealed that for a full year he had been living here in Cambridge and working for the Chapman Valve Company in South Boston. — Our Tarheel, S. W. J. Welch, has evidently taken to one of the

more occult sciences, since he gives as his address: Psychology Department, University of North Carolina, Chapel Hill. — Reverdy Johnson has moved from South Orange, N. J., to 959 Kenyon Avenue, Plainfield. — Robert Dresser, who in his undergraduate days combined pistol shooting with managing the T. C. A. Handbook, is now with the Audio-Tone Oscillator Company, Springfield, Mass. — Bull Roberts is now on a three-year contract with the Cerro De Pasco Copper Corporation at Morococha, Peru. Bull evidently likes South America as this is his second expedition there. Between trips he was with the American Brass Company in Buffalo. — M. W. Davidson made his annual call at the office of the secretariat this summer and reported his continuing career with the Telephone Company in Harrisburg, Pa. His major job, however, is acting as Secretary of the local Technology club. — Donald Nelson was associate architect on the Swift Theater at the Century of Progress. Last year he collaborated on the design of the Federal Building. — Wilfred Carter called at the office in August. He left the Housing Company in Boston to oversee the construction of a building at Hampton Institute, where he remained to take charge of the course in building construction, founded by A. F. Bemis, '93. He reports that he has built a house entirely with his own hands and those of several other Technology carpenters. Carter is the man who developed "Acoustex." — J. RHYNE KILLIAN, JR., *General Secretary*, Room 11-203, M.I.T., Cambridge, Mass.

## 1927

If we were to choose the 1927 News of The Month, or summer as this happens to be, we would choose the advent of Miss Sally Gayer Lyles in early summer as the outstanding event. Jim's business brought him to Boston shortly after Sally's arrival and he unmistakably showed that it was to him an event of the century. In absorbing the assets and liabilities of Harris Forbes, the First of Boston Corporation has taken Jim to function in their buying department.

The New York Times reports the marriage of Miss Geraldine Adams of South Orange, N. J., to Fred Willcutt on June 2 and that Carl Weiss officiated as best man. Fred is connected with the Potomac Electric Power Company in Washington, D. C. — On June 9, Miss Eva Marie Freeburg of Manchester, Conn., and Bob Dexter were married. They will live at 164 Strathmore Road, Manchester. — If engagements and weddings are the criterions of wealth and success, 1927 certainly has had a big year. The next clipping, also from the New York Times, tells of the wedding of Miss Alma Dorothy Clarke to Carl Weiss in New London on June 30. On the same day, the Times reported the wedding of Miss Vera Grace Malone to Bill Hogan. Dan Metzger was best man and Bruce Sherrill was an usher. The Bill Hogans will live in Hoboken. The Boston Transcript of June 9, announces the engagement of Miss

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Louise Cutler Stuart to Al Beattie. Miss Stuart attended the School of Fine Arts in Boston and Julian's in Paris.

We learn that Jimmie Small graduated from the New York University Evening Division of the School of Law this spring and that he received "Second Honorable Mention." Ollie Jones is in the Sales Department of the Ethyl Gasolene Corporation and was in Detroit at last reports.

Fritz Glantzberg has written from Nichols Field, Rizol, Philippine Islands. We quote excerpts from his very interesting letter. "As for me, I was off my flying for nearly a year as a result of getting hit on the head with a lead weight, while flying. As I had just arrived over here, it took them some time to decide that I had always been that way and that it wasn't due to the four square inches of skull they relieved me of. Last November, I took leave and went up to China for a look around. Took a Navy transport to Chingwantao and then up to Peiping, where I spent a week inspecting obsolete palaces, fortifications, and temples and listening to an never ending repetition of, 'No mama, no papa, no chow-chow, poor little chinky.' (This is the local interpretation of 'Brother, can you spare a dime?') On Thanksgiving, I made the mistake of having a Chinese dinner served in the Chinese manner with shark's fins, hundred year old eggs, varnished duck et al. which, although consumed with surprising intestinal fortitude, gave me ample cause to regret my rashness. Went overland to Shanghai by train. Looked up Wally Kwok, who is a broker in his brother's office there. Wally certainly knows his Shanghai and treated me to a Chinese dinner I really enjoyed and didn't regret. Shortly after that, though, the fog closed in and didn't lift completely until I got to Hongkong, where the British influence had affected the popular version of 'Brother can you spare a dime?' and the interpretation is, 'No mama, no papa, no whiskey-soda,' and Lord help you if you inadvertently give one of them a few coppers. Expect to be leaving here next December and hope to get a chance to look up Ralph Johnson on my way through Honolulu."

It is with regret that we must inform you of the death of Chan Burckes. Chan died this past June in New York where he was an electrical engineer for the Telephone Company. — JOHN D. CRAWFORD, *General Secretary*, 30 State Street, Cambridge, Mass. RAYMOND HIBBERT, *Assistant Secretary*, Room 101, 238 Main Street, Cambridge, Mass.

## 1928

Recently we received through indirect channels a criticism of the 1928 class note section which seems worth recording at this time inasmuch as we are starting another new season in The Review. Our critic spoke of the fact that this column was apt to contain a relatively high percentage of news about certain people and a correspondingly small amount about the individuals in whom he was



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most interested. Statistically, an analysis of past Review issues shows that this criticism is more imaginative than real. However, let's assume that our friend's remarks were entirely right. It seems obvious that anyone could easily find the reason for such a condition because every bit of class news we know about is printed in this column.

In gathering such information, we rely upon letters from classmates, direct and indirect personal contacts, and upon a newspaper clipping service. It is quite impossible for any one secretary or any group of course representatives to correspond with everyone in the class. We rely upon '28 graduates themselves to supply the news which goes into The Review.

Several of our notes for this month have been waiting for this first issue, but undoubtedly they will still be news to many fellows in the Class. Leading off the list we have the following short but expressive item about "Pete" Kirwin: "Mrs. Thomas J. Knowles announces the marriage of her daughter Mary to Mr. Peter Henry Kirwin on Saturday, June the thirtieth, nineteen hundred and thirty-four, Philadelphia." Congratulations, Pete, and we wish you and Mary a lifetime of happiness and good times together.

Early last summer the New York Times carried an announcement of the marriage of Carl Rumpel and Miss Marjorie Stone, daughter of Mr. and Mrs. Fred E. Stone, at Scarsdale, N. Y. The itinerary of the wedding trip took Carl and Marjorie to the West Indies and South America. They are now living in New York City. We extend our best wishes for their continued good fortune. — We haven't heard from Jim Bourne for a long time, but we recently learned that he has been married for four years, has one youngster, a year old, and is living at 681 Barrymore Street, Phillipsburg, N. J. Jim works for the Ingersoll-Rand Company and has been with them since graduation.

Bob Canning is now chief chemist of the American Steel and Wire Company, Worcester, Mass. It's probably too late to congratulate you, Bob, but we were all very happy to get the news. — Bob Harris of the Biology Department at the Institute has been taking his golf quite seriously this summer with remarkably fine results. Through the past playing season he was captain of the Charles River Country Club winning 4-Ball Team.

Saturday, the 16th of June, was the wedding day for (Doctor) John Chamberlain and Miss Eleanor L. Bowker. The wedding was held in the First Baptist Church of Brookline and was followed by a large reception at Longwood Towers. Congratulations and best wishes have already been given to Doctor John and Mrs. Eleanor. — Wedding felicitations are also in order for Mr. and Mrs. Arthur E. Robinson, who were married on August 1 at Albany, N. Y. Mrs. Robinson was formerly Martha L. Yucker.

It is with deep regret that we announce the death of our former classmate, Chandler H. Burckes. Chandler for the past six years had been an electrical engineer for the American Telephone Company of New York City. He died recently at the home of his parents, 18 Sargent Avenue, Somerville, in his 28th year. Beside his parents, his widow, Marie L. (Bacon) Burckes survives. We extend our sincere sympathy to the Burckes family.

We quote the following very interesting paragraphs from a recent letter received from Charley Richheimer, who is now located in Gainesville, Fla. "The only time you can't hear a pin drop at the intersection of any main streets in any town in Florida is from December to March. It's sad but true — how true. I have been working on the state survey of Florida, under the joint supervision of the U. S. Coast and Geodetic Survey and the Mapping Authority of Florida. Private work in the state is at a standstill. I have more than a dozen municipal improvement jobs 'on the string,' but so far not one job has reached the 'money stage.' Most of them depended on PWA grants to the cities, but sad to relate, those grants have not come true. As for the municipalities themselves doing the work with their own money — that's just impossible. Look at Key West — people down there want to give the whole town back to the Indians — and the rest of the towns in Florida are not much better off as regards municipal finances. I'd sure like to run across an old crony or two from '28, but they seem to avoid Florida. If you know of any, let me know. — The news of Hank Harris's death certainly hit me and I just can't quite realize it yet." — Ralph Johe has moved to 11 Valley Road, Winchester. — GEORGE I. CHATFIELD, General Secretary, 5 Alben Street, Winchester, Mass.

## 1929

Let's start this year's news with some tardy news of last spring. Late in April Arthur Pforzheimer, XV<sub>2</sub>, wrote me of a dinner that the Class of '29 held at the New York Technology Club and, due to a slip, the story he wrote did not get into the July issue of The Review. Arthur's letter follows: "It's a little late to write you about the dinner that the Class of '29 held at the New York Tech Club last month. However, we do want to spread it on record and so I'll start in with a list of those present: Arthur Marsh, Adrian Clark, Theodore Ewald, Kenneth Hogan, John Sullivan, T. J. Donnelly, Carlton Wood, W. W. Schormann, Roger Sykes, Harry Dickinson, and Arthur Pforzheimer (your earnest correspondent). It wasn't much of a turnout when you consider that there are about 100 men of our class in this locality, but we honestly enjoyed the evening and we did not spend it in sad remembrances of dear old Tech. Most of us talked of what we had done since we left the old place and commented on the fact that so many have not stuck to engineering.

"The only business of the night was a discussion of reunion plans for June and an informal vote showed that the majority here favor holding it this year. We also expressed a wish to hold another dinner in May some time and I have just arranged that with Milt Male. It seems that there is to be a club meeting next month (May) at which Tubby Rogers will be the guest of honor. Milt is arranging for us to have a dinner of '29 men alone before the main event comes off and we hope that we can get more than 11 men this time.

"You know this is the first time I have reported myself since I left school, so I might as well give you a little résumé of my career(?) to date. After I left Tech, I worked for the Boston Herald for a few months as a space salesman and then left to return to New York to live with my folks. I then joined up with Abraham and Straus in Brooklyn in their advertising department and spent about four years writing copy, handling their direct mail, and managing their basement store advertising department. I left there last June and kicked around a while before landing two jobs at once. One is with the outfit whose name is on this letterhead (Barnes Press, Inc.), where I am their salesman, and the other is with a radio magazine where I write advertising copy for some of their accounts. Neither one is making me much money at present, but I have hopes for the future. I am still single; in fact, I haven't even found a prospect, but I am waiting for Tubby's talk next month to see if he can give me some ideas for the future, for my present bosses have no eligible daughters. In all my kicking around since I left Tech, I have not met a single classmate except for this one dinner, so I can't report on any other men. However, if our next dinner has a respectable turnout, I should be able to give you more of a story." We'll be waiting to hear more interesting news regarding '29 activities around New York, Arthur, and also more about your own activities, so don't forget the story on the May meeting.

We are now proclaiming a New Deal for a number of the Class and extend our heartiest congratulations to them. The marriage of Charles R. Girling, XVII, to Miss Gertrude E. Knox of Taunton, Mass., took place on June 28, 1934. — On May 22, 1934, Stuart Barnette, IV, was married to Miss Ruth W. Stark of Jamaica Plain, Mass. — The engagement of Foster Gladwin, XV<sub>2</sub>, to Miss Louise J. Gullion of Somerville was announced about the middle of June.

Since I did not have the pleasure of attending our reunion in June, due to the fact that this law course I am taking extended through the month of June, I haven't any news to offer covering the subject. However, I am going to try to get Len Peskin, our reunion publicity manager, to write it up for our next Review. If you attended and would like to tell us about it, don't hesitate to drop us a line. If you have any suggestions to offer on how our reunions might be improved, or if you want to hand the re-

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union committee any bouquets on their handling of the reunion, send them in while they are hot so that old bird "procrastination" will not pigeonhole the ideas and news for eternity.

George G. Morrill, Room 11-210 at the Institute, has sent out a plea for information regarding the whereabouts of the following members of our class for whom there are no addresses. If you have any information concerning them, please send it either to him or to me and I'll see that he gets it. The list follows: Joseph F. Clary, II, Hsueh S. Huang, IV-A, Eugene C. Koo, X-B, George J. Westman, XVI, Harry J. Blancher, VI, Joseph L. Curran, II, Ray M. Durrett, VI, George A. Elias, S.M., Charles A. Felker, XV, Howard G. Gilbert, I, Hugh C. Gilgan, X, Kenneth W. Grimley, S.M., Teh S. Kim, VI, Henry S. Muller, VI, S.M., Manuel V. Patino, I, Sergius G. Philippoff, II, Neil C. Ross, VI, Ramon A. Saavedra, XI, Jun D. Thom, II, Joseph A. Villeneuve, VI, S.M., John M. Way, III. — EARL W. GLEN, *General Secretary*, Box 178, Fairlawn, Ohio.

## 1930

Our five-year class reunion is scheduled for next spring and barring acts of God or Congress, we plan to have a real reunion. We want all your ideas on the subject as the more ideas we get, the better we can make it, so let's hear from you.

I received the following message from Jack Bennett: "At last an opportunity looms up for the members of the Class of 1930 to act their age, but not for long. Remember our class picnic, the burning buildings, and Herm Botzow tackling the mast! Next spring we are due for our five-year class reunion. For five years we will have been 'taking it,' and 'giving it,' too, we hope, and it is indeed time for us to get together as a group, to forget about jobs, or looking for them, and to recall some of the good times we had together in the spring of 1930 and before. In order that ours be the best reunion that's been held in a long time, we want suggestions, and lots of them. Besides, I should like to hear from some of the gang, even if this must be used as an excuse. Where should we hold the reunion; what would you like to do; what is your capacity, and so on? This is the opening gun and I'm counting on you for lots of ammunition. Start planning right now for a big get-together somewhere in New England next spring around June 1. Greetings to everyone and I'll be seeing you then."

Jack, incidentally, is still working for Goodyear Tire and Rubber Company in Akron. His address is 715 East Butchel Avenue. While on a recent trip I stopped in Akron and saw Jack, Ted Riehl, and Fluque Rowzee. They all seemed quite well and prosperous. Phil Holt was out of town at the time. — I heard that Wally McDowell is about to be married but have been unable to get official confirmation of the rumor. — We have also heard of the marriage of Joseph Twinem to Miss Olive Margaret Kenner at Cripple Creek, Colo. We understand that after September 1

they will be in New York City. — John K. Kennard has also taken the big step. He was married on July 25 to Miss Dorothy Walton in Portsmouth. John, we understand, is back at Tech as an instructor. — Other new members of the ball and chain gang are: W. B. F. Ottaway and Gregory Meagher. Beverly Ottaway, who as we remember it, was leader of the Glee Club, was married on August 5 to Miss Louise Woodman, daughter of Professor Woodman of M.I.T. Ottaway is now working in Boston for the State Department of Public Works. St. Gregory Meagher was married last July to Miss Joan Crocker.

In addition to these weddings, we have received notice in one form or another of the following engagements: Robert Crowell to Miss Marjorie May Wiehl of Glen Ridge, N. J.; Howard A. Robinson to Miss Kira Volkoff of Schenectady; Garret E. Green to Miss Barbara Nicoll of Great Barrington, Mass.; Warren H. Martell to Miss Mary McGillicuddy; Lester E. Keene to Miss Runa Thelma Darry of Newton, Mass.; Irvine E. Ross, Jr., to Miss Elisabeth Brown of Needham, Mass.

As for myself, I can only say that between becoming the proud father of a daughter on July 3 and being transferred to the chlorine products sales section of R. & H Chemical Department of du Pont on August 1, I have had quite an exciting summer. I am now located in Wilmington, Del., and am doing sales service work. Please notice my new address and send all news and any ideas for the class reunion to me so that we can make the necessary plans. — MORELL MAREAN, *Secretary*, 2815 Harrison Avenue, Wilmington, Del.

## COURSE VI-A

To start off chronologically, last February 17, George Theriault wrote me an interesting letter that I have not yet answered. Terry has had various assignments with the Budd Company since he was married on May 6, 1933. Shortly after his marriage, he was sent from Philly to Quincy, Mass., to supervise the welding in the erection of a stainless steel deckhouse on a new navy destroyer. After that he got a trip to Bath, Maine, where another deckhouse was built. At the time of writing (of this letter) Terry was back in Philadelphia supervising the welding done in the shop before the parts are sent to the shipyards. One can see at a glance that anyone with welding problems should seek out Terry.

It gives me great pleasure to announce the marriage of Raymond J. Bowley and Miss Tucker of Somerville, Mass. That man about town, Prendy, was best man. Ray beat me to it by only a matter of weeks in that eventful month of last April. That makes two down and two to go, if my prophecy in the May issue is remembered. — We recently enjoyed a very pleasant week-end when Frank Burley and his wife visited us. The only dark moment was when Frank and I were deserted by our respective wives with orders to do the dishes.

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Prendy spent an evening with us and gave us an exhilarating ride in his newly acquired chariot for his stamping grounds in Westfield, N. J. Prendy is busily working with filters and filter theory at the Kearney works of the Western Electric Company and will probably write a book on the subject soon.

George Schaible writes that he is getting to be quite a farmer in his spare hours while not working for the New York Telephone Company in Albany. We expect to have the Schaibles visit us soon, after which his activities will be duly spread upon the record. — EARL E. FERGUSON, *Secretary*, 321 Park Avenue, East Orange, N. J.

## COURSE X

Biggest news of the summer is the wedding on August 1 at Great Falls, Mont., of Miss Sara Bell Strain to Mr. Hermann Steffen Dieckmann Botzow. The rapidly growing group of Course X "family men" welcomes Herm to its midst with the greatest of pleasure, and we wish the new couple the utmost in happiness. Their address will be 362 Heywood Avenue, Orange, N. J.

Public acknowledgment is hereby made and appreciation is expressed for the newsy letter recently received from Ed Nolan, whose address is 35 Cobden Street, Roxbury, Mass. After graduating from X-A in 1931, Ed landed a position entitled research chemist with the Birdseye Laboratories, a subsidiary of General Foods Corporation, and did chemical and physical research in the development of the quick-freezing process for vegetables. He was an eye-witness and participant in some of the wholesale curtailment of research programs as a result of the depression, and watched over 120 of the organization "walk the plank." Finally, with five remaining colleagues, he found the work end completely in December, 1933. A traffic survey job with the CWA kept things going from January until April, when Ed landed a job with the Boston Woven Hose and Rubber Company. The big break, however, came in May, when he was awarded the J. T. Baker Chemical Company Research Fellowship in Analytical Chemistry. Accordingly, Ed plans to return to the Institute in September as a candidate for the doctor's degree, carrying out his thesis, under Professor Schumb of Course V, on the quantitative determination of zirconium. Good luck to you, Ed!

Ronnie Youngson was in Gloucester with Ed Nolan at the Birdseye Laboratories and is now in Menasha, Wis., doing paper work. — Bob McCarron made a trip East this June and reported his doings. He is chief chemist of the Escanaba Paper Company, at Escanaba, Mich., in a plant with a daily production of about 150 tons of ground-wood pulp and newsprint. In 1932, he received the master's degree from the Institute of Paper Chemistry at Appleton, and has completed part of the work for the doctorate.

From McCarron, we learn that Fred Holt was married last year and is chief chemist of the Gummed Products Com-



## 1930 Continued

pany, Troy, Ohio. How these X-B men do go places! McCarron also reports the discovery of George Gassett tooting a saxophone — familiar sight — in a dance band somewhere along the South Shore, near Boston; and that George has recently landed a job with the Boston Edison Company. — Stan Wells and his bride, formerly Miss Ann VanLaer of Rochester, have returned from their wedding trip and are now living at 141 Browncroft Boulevard, Rochester, N. Y. — Ted Riehl, Jim Holden, and Ralph Rowzee, the majority of our Akron delegation, visited Ralph Peters in Rochester for a week-end this summer. With Phil Holt, they are working in the research lab at Goodyear. — HOWARD S. GARDNER, JR., *Secretary*, 380 Ridgeway Avenue, Rochester, N. Y.

## 1933

Although it seems quite a way back, we had a dinner here in New York last June and had about 20 of the local fellows out. Here are some of the notes I picked up there: Dick Fossett came down to be with us and was to start with Procter and Gamble in St. Louis during August. — Bob Swain is with the Sylvania Hygrade Company. — Dil Collins is with the Public Service of N. J. — Bill Miller is assistant city engineer of Scranton. — Bill Gray is with the Hygrade Company. — Frank Richard is with the Raytheon Company in Newton. — Frank McCormick is with Hygrade Sylvania in Salem. — Ed MacEven is in the contracting business. — Dan Fink is with the McGraw Hill Publishing Company as one of the editors of *Electronics*.

Sorry we haven't more about our European contingent. — Ivan Getting is home for the summer but is going back for another year at Oxford. — Dick Morse is expected back this summer from Munich. — We'll have more about these fellows next time. — Ed Hillenbrand secured his master's in June and is now with Union Carbide at Charleston, W. Va. — Ken Moslander is with American Chicle in Long Island City doing industrial engineering work. — Jack Andrews is with Eagle Pencil here in New York in the purchasing department. — Bill Keith is with Dun and Bradstreet. — Cy Hapgood is with a patent law firm in New York. — Dave Treadwell is with du Pont. — Remi Beau Sejour is with Procter and Gamble in Staten Island. — Adrien Collin is running a power plant in Quebec and was in New York on his honeymoon the night of our dinner. — Herb Grier is back in Cambridge as research assistant to Professor Edgerton. — Ed Lockman is with the Anglite Corp. — Prentiss Lobdell was back at school last year. — Charlie Bryan is with Ford Instrument. — Jim Merrill, New York Edison. — Joe Blanchard and Herb Endly are insurance men. — Bill Barbour is with Carr Fastener. — Cirker has finished his work for his master's. — Bob Dillon is with Carbon and Carbide Chemical Company at Charleston, W. Va. — Charlie Bell is with Chase Brass and Copper Company and living in

Yonkers. — McDuff and Snell are in the Army Air Corps at Randolph Field, Texas. — Jim Hayes is with Dennison. — Henry Kiley has an engineering position in South Boston. — Bob Kinraide has recently been married and works in Wickwire Spencer Steel Company. — Ivar Morgan is serving as an apprentice in a training course being offered by the Phelps Dodge Copper Products Corp. of Elizabeth. — John Logan is with Jersey Central Power and Light.

It is with much regret that I read of the death of Kenneth E. Piper on July 30 after six weeks' illness of infantile paralysis. We all knew Ken as one swell fellow while at Tech. He continued his good work with the Athol Gas and Electric Company. I am sure his host of friends join me in extending our sympathy to his family.

A recent letter from Bob Kimball tells us he is still busy running the Institute — summer doesn't seem to be all vacation in the registrar's office. He gives us a line on Quimby Duntley — he spent the last year at California Tech; has his master's and plans to take his doctor's degree at the Institute.

Johnny Longley is with the New York Telephone Company near Binghamton, N. Y., and the following is part of a letter he wrote me in June: "My work with the Telephone Company consists at present of pole line inspection work under an experienced construction man. The fellow under whom and with whom I am working at present has been with the company for about six years, and is a construction foreman, when there is enough work to be done, and at present there isn't. He has been assigned to this pole line inspection work, and I have been assigned as his assistant. . . . The work is rather monotonous, but has to be done and does have many elements of interest, but is hardly the sort of work that I would care to do for very long. From here I shall probably be transferred to construction crew and from there, there is no telling where I shall go. It depends on me, as they say. I have put on about seven pounds in weight and the heavy work has made me put on so much muscle that every time I bend forward and stretch I split my shirts! I have been transferred from one inspector to another already, to change my scope of experience, I suppose, and will probably be transferred again at the end of the week, where I do not know, but probably some location around Binghamton. I hope to land up around Syracuse eventually, perhaps in the fall, as it is a much more pleasant city. I know a few more people there and the opportunities are greater, I believe."

Nat Goodman dropped in on his way to R.O.T.C. camp. He was in the insurance business, but while in New York was looking around for better connections. — Nat tells me of Frank Lopker's illness, which caused him to return home from Grand Rapids, where he was working for Keeler Brass. We hope all is well again, Frank. — Bob Ripin spent the winter months working in his Dad's

woven label concern; during the summer he runs his own summer camp and is making a great success out of it.

Well, I've given you all I know, fellows, so you'll have to give me some information for next month and the months after. I'd like to receive some letters from those fellows not mentioned. We are all interested in what you are doing and where you are. — GEORGE HENNING, JR., *General Secretary*, 163 Barbey Street, Brooklyn, N. Y.

## COURSE I

I am writing from Sunny California, having driven out on my vacation, and I expect to return home shortly. At the Chicago Fair, quite by accident, I ran into Cal Mohr, on vacation from the du Pont works in Buffalo. He tells me that Bill Pleasants has left there for Wilmington, in connection with a new plant for the du Pont Company. While in San Francisco, I stayed with Horace Taul, who has a position in the engineering department of the Standard Oil Company there; he has recently returned from an earthquake survey of their properties. — Al Garnell has gone to Denver to join Johnny King with the U. S. Bureau of Reclamation. — Ingy Madsen is joining me in September on a two years' research fellowship at the Fritz Laboratory of Lehigh University, to investigate the properties of steel plates for the A.I.S.C. — DOUGLAS STEWART, *Secretary*, 910 Osstrum Street, Bethlehem, Pa.

## COURSE III

Raff Faulkner, the former Course Secretary, wrote me the following letter from Peru, where he is with the Cerro de Pasco Copper Company. — G. H., Jr. "I am making good use of my spare time while in Lima and am getting a few letters off my chest. We get two weeks' vacation every six months and most of us spend the two weeks and all the money we have accumulated in Lima. It's lucky that vacations come no oftener. Being on the 'hill', George, is like wearing your overcoat in the summer time — you feel great when you take it off. But it has its compensations, for you thoroughly enjoy the green trees and the flowers and the air which has more substance to it.

"This time of the year is not the best season in Lima, for it is always cloudy and the sun rarely shines. I haven't seen the sun in the ten days I've been here. On the hill at Morococho, it is a different story because the seasons are reversed and there the sun shines all the time — not at night of course. I have a few more days in Lima and then return to Morococho but a couple of weeks at sea level will work wonders. Working at 15,000 feet, one tends to become nervous, irritable, and to lose weight, but a few days in Lima will correct all those things and fix you up for another six months."

Raff also sent me the following information which Prof. Locke sent to him. Thank you, Professor — G. H., Jr. "Rumsey has received his master's degree and is going to work for General Motors in Detroit, where he was last summer. —



1933 Continued

E. S. Norris also received his master's degree. John Streng finished up in the first term and recently got located with the Inland Steel Company at East Chicago, Ill. Vaughan worked over town for a number of months, but was fortunate along toward the end of the year in securing work with the U. S. Smelting Company at their research laboratory in Cambridge, where he still is. B. B. Whitney completed his thesis the first term and is now on a long tour of the United States and Canada to visit all of the prominent mining districts, primarily for the purpose of adding to his practical knowledge and, probably, secondarily, with the thought that he may ultimately locate a job. Oldenburg is still in the oil business in Texas. Rinehimer went into the Army and I believe he is stationed at the Canal Zone. Milburn has been working for his degree at the New Mexico School of Mines. Alpert and Laserna are two other men who received their master's degrees this June. Cohen is still continuing for his doctor's degree.

"Penning worked around New York until this spring, when he went with the Struthers Wells Company at their boiler factory in Titusville, Pa. Rabinovitz changed his name to Rabson, and is with the Lepel High Frequency Laboratories in New York City. Shaughnessy sold stock for a while in a tin mine in North Carolina and then went down to the mine last fall. I gather that the mine was not very successful, as might well have been anticipated, because he was back in New York early in the spring and is now with the Transite Pipe Division of Johns Manville Company, N. Y. C."

Emmie Norris has agreed to be the new Course III Secretary and sent me the following letter the other day from the Bethlehem Steel Plant at Sparrows Point

— G. H., Jr. "At my first opportunity after reaching this place, I looked up Whitey Culverwell. He told me he has been working here since he got out of school in June, 1933. His work is with the metallurgical department. He has worked in various parts of the mill, but most of his time has been in connection with the open hearth shops, doing observation work and pinch hitting in the office for the big shots while they are away on vacations. He likes his work very well and is succeeding accordingly, so it looks as if he will go a long way in the steel industry. Johnny Rumsey and Louis Alpert got their master's degree this June in metallurgy. Morris Cohen has been working this past year for his doctor's degree. — Now I'll tell you what has happened to me. There were 40 fellows taken on by Bethlehem. We were all at Bethlehem for three days living at the company's expense. Then they sent us to the various plants belonging to them. Eight of us were sent here to what is called the Maryland Plant. This town is about 12 miles from Baltimore, down the bay. It's a town of about 5,000, all living from the company. There is nothing to do but go across the street to the movies or up the street to buy a soda. It's the hottest and most humid place imaginable. In front of this Inn about a couple hundred yards are two blast furnaces and the ore yards. It isn't as bad as that would lead you to believe. It really is the cleanest steel town I know of. Even the general manager lives down the street three blocks. For the past month we have been around the plant visiting each department to get an idea how a steel mill operates. Yesterday, we got our permanent assignments, mine being in the open hearth, where I suppose I'll be chief broom wielder."

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Norris' new address is: Beth-Mary Inn, Sparrows Point, Md.

## COURSE XVII

Summer has gone and the dead line for notes "snuck up" on me kinda quiet like, so we shall have to content ourselves with word from Rowell, his letter having come just too late to make the last edition.

It seems that what with the NRA revival of business not penetrating to the far reaches of Philadelphia's wooden box and house alteration "profession," our Mr. Rowell just up and quit the company he was working for when another job offered itself. And now we have a representative engaged as part of the appraising industry. Just what type of work Rowell is doing, I can't say, but his father's company took a large job, and now Eddie is toiling mightily. More power to him. — We are sorry to learn that Rowell lost his mother through death the last of May and extend him our deepest sympathy.

At last and finally the Government of this great United States has taken over the houses I've been working on and I'm at home, or I will be when this is read. I've had my vacation, a whole ten days lacking six hours, and the superintendent, thinking I needed it, put me on the payroll while I was away. (How right he is!) The rest of the fall and winter, I hope, will be spent in Charlotte at the company's office, where I'll take a flyer at the inside work for a change. So, gentlemen, should you by any chance suffer twinges of conscience and drop a note for the good of humanity and the information of XVII-'33, send it to me here (there). — BEAUMERT WHITTON, Secretary, Southeastern Construction Company, Box 431, Charlotte, N. C.